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ABSTRACT

Originally, this project attempted to find appropriate existing instruments that would be useful in the assessment of desired pupil outcomes for the Experience Based Career Education (EBCE) programs. When this effort proved unsuccessful, the next step was the development of systematic observations on a time-sampling basis. When this procedure was rejected, the questionnaire was developed, to be used in conjunction with in-depth pupil interviews. For this purpose, a career-planning model was developed that was intended to cover the common features of the four EBCE schools. The questionnaire covered aspects of career interest and familiarity, career requirements for first- and second-choice careers, and self ratings with respect to school-related abilities, physical abilities, creative abilities, interpersonal skills, interests, and additional personal characteristics. There were some open-ended questions that had to be coded after the interviews. Reliabilities for the coding and for questionnaire subscores were computed as well as intercorrelations among some of the variables. Rationales are presented for many of the decisions required in the process of developing this instrument. Statistical data and the interview questions are appended. (CTM)

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# SEARCH FOR AND DEVELOPMENT OF INSTRUMENTS MEASURING STUDENT OUTCOMES OF EXPERIENCE-BASED CAREER EDUCATION PROGRAMS

BY

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EXTERNAL EVALUATOR'S FINAL REPORT ON THE
EXPERIENCE-BASED CAREER EDUCATION PROGRAMS

VOLUME VII

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EXTERNAL EVALUATOR'S FINAL REPORTS ON THE
EXPERIENCE-BASED CAREER EDUCATION PROGRAM

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# CHAPTER 1

## BACKGROUND

The Experience-Based Career Education (EBCE) schools were designed and developed to be markedly different alternatives to existing high school programs. The organization, focus, goals and objectives of the schools evolved over several years. While there were elements in the development of the schools that were similar to the development of new curricula within existing schools, the EBCE approach necessarily went far beyond conventional curriculum development in scope. The approach to the external evaluation of such schools, therefore, also had to be to some extent as different and innovative as the development of the schools. Since the usefulness of evaluation in the final analysis is limited by the quality and relevance of the information collected, the search for or development of instruments to collect this information required that extensive effort be devoted to searching for or developing instruments that would have relevance not just for a particular curriculum, but for a total school program.

The goals and objectives for the EBCE schools were derived from some very general goals or needs statements, but they evolved over several years somewhat independently in four different institutions. Prior to the initiation of the external evaluation effort, the four project staffs and NIE staffs cooperatively undertook to review the separate sets of objectives and to arrive at a commonly acceptable set of goals. A brief review of the history of the development of the program goals and objectives is given in Volume VI, Chapter 1. As noted there, and set forth in detail in a separate document (Educational Testing Service, 1974), there was some agreement on program goals. However, there were also a number of objectives, and even goals, which were unique to each of the four separate schools. When Educational Testing Service (ETS) undertook the external evaluation work, it was necessary to make choices about the extent to which evaluation would focus on the common and on the unique school objectives. The schedule for the completion of the external evaluation, and the specifications for the work provided by NIE indicated that primary attention should be given to the collection of information relevant to the common goals.

A brief review of ETS efforts to apply or develop information collection procedures appropriate to evaluation of the four EBCE schools is given in the following chapter and in Volume VI, Chapter 1. Quite detailed descriptions of an ethnographic approach to the collection of information at each of the four schools are presented in Volumes II-V, and a report on the use of systematic behavioral observations at one of the four schools is provided in Volume VIII.

A third approach to the information collection problem was the development of one or more devices that would allow the individual students to provide data relevant to what had been accomplished for them as a result of participation in the EBCE schools. This approach started with extensive searches for existing instruments that might be useful. When it became evident that no intact instruments could be found, ETS undertook to develop instruments, using either questions and procedures drawn from a variety of instruments, or by writing new questions that were content valid with the commonly acceptable set of EBCE goals.

This volume is, in effect, a two-part report. Chapter 2 reports on the searches conducted to locate existing instruments, and on the initial steps to develop measures of students' learning outcomes. Chapters 3, 4, and 5 report on the rationale and development of a student in-depth interview actually used in the external evaluation.

In a separate report, Volume VI of this series, those instruments used to develop information from program participants other than students (e.g., parents, resource organization personnel, and former students) are provided. The background of the development of these instruments and findings are also discussed.

## CHAPTER 2

## INSTRUMENT SEARCH

One of the four purposes for the external evaluation of the EBCE projects, as identified in the Request for Proposal, was "to identify and develop, where necessary, valid and reliable instruments to assess the effectiveness of this individualized approach to secondary education." Common instruments were to be used in all EBCE schools to measure pupil achievement of the identified common NIE goals.

In the effort to identify existing instruments that showed some promise of being useful in the assessment of anticipated pupil outcomes, ETS conducted (during Stage 1 of the external evaluation; i.e., the summer of 1974) two computer searches through the ERIC* Clearinghouse on Tests, Measurement, and Evaluation; a computer search through PASAR**; and a hand search of the ETS Test Collection File located in Princeton. Direction for each of these searches was provided by the set of common goal statements. ETS staff believed that the documents and resources searched constituted the major files containing any reference to instruments that might be useful in the evaluation of career education programs.

As a result of these searches, a number of paper-and-pencil instruments and other measuring procedures having content of possible relevance to the anticipated EBCE pupil outcomes were identified and presented to NIE staff and directors and internal evaluators of EBCE schools at a meeting in late August, 1974. Figure 1 indicates the matrix of NIE goals and instruments and measuring procedures presented at this meeting.

From this array of instruments and procedures only the Comprehensive Tests of Basic Skills (Reading Comprehension, Arithmetic Concepts, and Arithmetic Applications sections) were accepted by the project staffs and the NIE.

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*Educational Resources Information Center, National Institute of Education, Washington, D.C.; the Clearinghouse on Tests, Measurements, and Evaluation is located at ETS, Princeton.

**An information system of the American Psychological Association; a direct access terminal is located at ETS, Princeton.

Figure 1. MATRIX OF NIE GOAL STATEMENTS (ABBREVIATED FORM) AND ETS PROPOSED INSTRUMENTS AND MEASURING PROCEDURES

(Note: Key to Instrument Codes Follows Matrix)

| | Observation on Job Site | (Pre-Arranged Task) | Paper & Pencil Test | Student Product Evaluation | Self Report (Forms) | Self Report (Interview) | Others Report (Form) | Others Report (Interview) |
|---|---|---|---|---|---|---|---|---|
| Integrate occu. info. $I_1$-with info. about self | | (S.O.C.) | | | | P.O.I. #1,10,14, 15,27 | (L.C.) | (L.C.) |
| Locate and use $I_2$-information about occu. | O.S.C. I.c-j. | (S.O.C.) | (NMCPT) | | | P.O.I. #9,16,21 | | |
| Positive attitude to $I_3$-career planning | | | (NMCPT) (NMATWT) | | | P.O.I. #18 | (L.C.) | (L.C.) |
| Knows function, choice, re- $I_4$-quire. of self select. occu. | | | (NMKOOT) | | | P.O.I. #8 | | |
| Knows factors of job success $I_5$-& job satisfaction | O.S.C. II.a-V.VI | | (NMCPT) (JATH) | | | | (L.C.) (R.P.) | (L.C.) (R.P.) |
| Demonstrate informed post- $I_6$-h.s. sch. ed/vocat. plans | | | (NMCPT) (NMCOAC) | | | | (L.C.) | (L.C.) |
| Can obtain employ. info., $I_7$-appl., interviews, etc. | | | (NMJAPT) | | | | | |
| Begin acquire job entry $I_8$-skills & experience | O.S.C. I.a.b. | | (NMCOAC) | | | P.O.I. #8 | (R.P.) | (R.P.) |
| Demonstrate understanding II -interv.,abil.,values,etc. | | (S.O.C.) (S.D.S.) | | | | P.O.I. #2,8,14,15, 21 | (L.C.) | (L.C.) |
| Can read newspaper, $III_1$-periodicals | O.S.C. $I_m I_g II_e III_b$ | | (CTBS) | | | | | |
| Can read manuals, forms, $III_2$-parts lists, etc. | O.S.C. $I_g II_e III_b$ | | | | | | | |
| Can read recreational $III_3$-materials | O.S.C. $I_c II_e$ | | (CTBS) | | | | | |
| Can read educational $III_4$-materials | O.S.C. I,II | | (CTBS) | | | | | |
| Can identify need or $IV_1$-problem | O.S.C. IV,b-j | | | | | | (L.C.) | (L.C.) |

Figure 1. Continued

| | Observation on Job Site | (Pre-Arranged Task) | Paper & Pencil Test | Student Product Evaluation | Self Report (Forms) | Self Report (Interview) | Others Report (Form) | Others Report (Interview) |
|---|---|---|---|---|---|---|---|---|
| $IV_3$-Generate alternative solu.;anticipate conseq. | O.S.C. IV,b-j | | | | | P.O.I. #9 | (L.C.) (R.P.) | (L.C.) (R.P.) |
| $V_1$-Effective & appropr. oral communication | III,j,k,l V,a,b | | (S-AR) | | | | (L.C.) | (L.C.) |
| $V_2$-Listen effectively | VI,g,d,h | | | | | | (L.C.) | (L.C.) |
| $VI_1$-Write ideas & feelings understandably | O.S.C. IIIa. | | | | | | (L.C.) (R.P.) | (L.C.) (R.P.) |
| $VI_2$-Write career involvemt. material correctly | O.S.C. IIIa. | | | | | | (L.C.) (R.P.) | (L.C.) (R.P.) |
| $VI_3$-Normal daily writing | | | | | | | (L.C.) | (L.C.) |
| $VII_1$-Effective peer & adult interaction | V | | | | | P.O.I. #1 | (L.C.) (R.P.) | (L.C.) (R.P.) |
| $VII_2$-Cooperation for goal achievement | V | | | | | | (L.C.) (R.P.) | (L.C.) (R.P.) |
| $VIII_1$-Comprehend numerical data | O.S.C. I.a. | | (CTBS) | | | | | |
| $VIII_2$-Daily living arithmetic | | | (NMCMT) | | | | | |
| $VIII_3$-Career-related mathematics | O.S.C. I.a. | | | | | | | |
| $IX_1$-Use of direct human sources | O.S.C. I.c-j | | | | | P.O.I. #9,16,21 | | |
| $IX_2$-Easy conversation with adults | O.S.C. V | | (PSMS) | | | P.O.I. #1 | (L.C.) (R.P.) | (L.C.) (R.P.) |
| $IX_3$-Cooperation with adults & task responsibility | O.S.C. VI,V | | (PSMS) | | | P.O.I. #3 | (L.C.) (R.P.) | (L.C.) (R.P.) |
| $IX_4$-Tolerance for others & for change | O.S.C. V | | (PSMS) | | | | (L.C.) (R.P.) | (L.C.) (R.P.) |

(NOTE: Key to Instrument Codes Follows Matrix)

Figure 1. Continued

KEY TO INSTRUMENT CODES

SOC = Simulated Occupational Choice
(Katz and Norris; Educational Testing Service, Princeton, N.J.; 1974)

SDS = The Self Directed Search: A Guide to Educational and Vocational Planning
(Holland; Consulting Psychologists Press, Palo Alto, CA; 1970-73)

NMCPT = New Mexico Career Planning Test
(Healy and Klein; Monitor, Hollywood, CA; 1973)

NMATWT = New Mexico Attitude Toward Work Test
(Healy and Klein; Monitor, Hollywood, CA; 1973)

NMKOOT = New Mexico Knowledge of Occupations Test
(Healy and Klein; Monitor, Hollywood, CA; 1973)

JAIM = Job Analysis and Interest Measurement
(Walther; Available from author: Dr. Regis Walther, Manpower Research Projects, Washington, DC; 1964)

NMCOAC = New Mexico Career Oriented Activities Checklist
(Healy and Klein; Monitor, Hollywood, CA; 1973)

NMJAPT = New Mexico Job Application Procedures Test
(Healy and Klein; Monitor, Hollywood, CA; 1973)

CTBS = Comprehensive Tests of Basic Skills
(California Test Bureau/McGraw-Hill, Monterey, CA; 1968-73)

S-AR = Speech-Appearance Record
(Bennett and Doppelt; The Psychological Corporation, New York, NY; 1967)

NMCMT = New Mexico Consumer Math Test
(Monitor, Hollywood, CA; 1973)

PSMS = Psycho-Social Maturity Scale
(Greenberger, et.al.; The Johns Hopkins University, Baltimore, MD; 1974)

Figure 1. Continued

KEY TO INSTRUMENT CODES (Continued)

LC = Learning Coordinator
(Forms/interviews directed to these individuals to be developed by ETS.)

RP = Resource Person or Supervisor
(Forms/interviews directed to these individuals to be developed by ETS.)

OSC = Observation Schedule Checklist
(ETS-developed for the project)

POI = Post-observation Interview
(ETS-developed for the project)

All other measures and procedures were rejected for common use in all EBCE schools, although internal evaluators in some schools indicated they would be using certain of the paper-and-pencil instruments suggested for internal evaluation.

While these various instrument search activities were being carried out, ETS staff members were also visiting each of the EBCE sites to gain a more complete understanding of the particular purposes and procedures that constituted the four EBCE schools. Additionally, ETS staff were exploring the mechanics and procedures that could be used in the selection of the most relevant comparison groups at each of the four sites. Generally, staff at the EBCE sites believed selection of such comparison groups to be quite unfeasible for a variety of reasons: e.g., gaining cooperation from schools and school districts to select a sample to be studied; identifying meaningful programs for comparison purposes; control pupils were already available from the pool of applicants not selected for the EBCE schools.

The time required for these instrument searches and for the exploration of alternatives for the selection of comparison groups, coupled with the apparent incompatibility of most existing standardized measures with the NIE goals, eliminated the possibility for pre-testing with outcome measures other than standardized tests of basic academic skills. Nor was it possible to obtain the information from the projects and local school districts that would be absolutely essential if comparison groups of students in other career or vocational programs were to be sampled and tested. In the fall of 1974, therefore, the planned design of the external evaluation was modified extensively. In effect, the external evaluator's information collection effort would be restricted to documentation of the EBCE processes and to assessment of outcomes for the randomly chosen EBCE and control group students, with the assessment to be based on post-only measurement (with the exception of the tests of basic skills) using instruments yet to be selected.

## Instrument Development

The revised design and information collection effort was to be implemented employing three different strategies developed specifically for the EBCE schools. The first strategy involved the use of systematic observation and documentation of the procedures implemented in the four

EBCE schools by independent observers using predetermined observation coding schemes. The second involved the use of qualified ethnographers to describe the total time-space environment at the four schools as seen by participant observers. The third strategy to be employed was the development of student measures or indicators that could be administered at the end of the year to both EBCE students and to the randomly chosen control group students.

## Systematic Observation

To implement the first of these three strategies, ETS proposed that systematic observation of students at resource sites and in the learning centers be made by trained observers using procedures for recording their observations in a prescribed way that would permit subsequent analysis and summarization. The observations were to be made on a time sampling basis at three points during the school year. The development of the observation procedures by the contractor was essentially a task of adapting procedures to the EBCE setting that had previously been used in a number and variety of classroom situations.

The observation procedures as adapted were pilot tested at three of the four EBCE school sites in the late fall of 1974, and preliminary results from the pilot test were reported to NIE and the project evaluation staff of the four EBCE schools in January 1975. This time sampling observation approach was rejected for use as part of the total EBCE program evaluation procedures by the staff of three of the four EBCE schools, and by the NIE staff after review of the preliminary report by an external specialist panel convened by NIE for this purpose.

The staff at one EBCE school site did request that the systematic observation procedure be continued at that site. Volume VIII provides a thorough discussion and analysis of the observations made at this site (The Far West School).

## Ethnographic Observation

The second strategy, that of using ethnographers to describe the school environments, was implemented according to very general specifications set forth by NIE following a meeting with the four EBCE project directors and project evaluation directors. The ethnographers were to focus primarily on: the EBCE school processes; the activities of the students as they carried out their individual projects; and the interactions of the students among themselves, with school staff, employer/community

resource persons, and with counselors and others with whom they came in contact during the school day. Although this approach was described as being primarily descriptive, it was suggested that the ethnographers might be able to arrive at some judgements about the changes in the behavior of the EBCE students during the period of observation, particularly in the areas of career awareness, interpersonal skills, affective skills, and life skills.

The ethnographic approach was planned in some detail by ETS after consultation with Dr. Robert B. Textor of the Department of Anthropology, Stanford University. It was recognized, however, that in the final analysis the details of the studies to be done at each school rested with the ethnographer employed for each site. The decision was made by ETS to identify qualified ethnographers who would be employed by ETS, but who would serve in the role of independent collaborators on this aspect of the external evaluation effort, rather than as ETS staff members.

The selection of and arrangements with the independent collaborators were completed by December 1974. However, the four ethnographic studies could not be effectively started until the second semester of the 1974-75 school year at the four sites.

The reports on these four ethnographic studies are presented separately in Volumes II through V.

## Assessment of Common Outcomes

The third strategy to be employed, measurement of outcomes for EBCE and control group students, was initiated by two additional explorations beyond the ERIC, PASAR, and hand searches referred to earlier in this chapter. The first of these searches involved a thorough review of the library of developed simulation exercises and games located at Rutgers University. This search was undertaken by a member of the ETS Test Development Staff at Princeton and was a further effort to identify existing potentially useful procedures, both in terms of the judged relevance of the simulations to the NIE/EBCE goals and the available information about the demonstrated reliability or validity of the exercises. The only simulation exercise that seemed to merit any detailed consideration was one developed at ETS by Katz and Norris named Simulated Occupational Choice. Both the developers of this exercise and the ETS project staff considered this simulation to be much less than adequate for the

project purposes, however, as Simulated Occupational Choice had been developed to provide information and experience to students in developing decision making capabilities, rather than to indicate the achievement of instructional program objectives.

Internal evaluators at three of the four EBCE schools responded negatively, either orally or in writing, to the ETS proposal to consider Simulated Occupational Choice as a measure of student outcomes. No response was received from the fourth school. The instrument was then dropped from further consideration.

The second of the additional explorations used, as a starting point, work done by Dr. Bert Westbrook of North Carolina State University, a member of the Advisory Committee formed by the contractor when the evaluation project was initiated. Dr. Westbrook had, for some time, been conducting an ongoing review of goals, objectives, and student evaluation procedures in use by a number of career education programs throughout the country. By November 1974, he had identified fifty-four instructional objectives in the cognitive domain that seemed to be adopted quite frequently by such programs, and had classified items from six available instruments (listed in Figure 2) in terms of these fifty-four objectives.*

The ETS staff for the EBCE evaluation project then analyzed the extent of congruency between Westbrook's work and the objectives as stated or implied in the EBCE goal statements that had been incorporated in the RFP. This analysis indicated that four of the EBCE goals were congruent with combinations of objectives identified by Westbrook. Those test items from existing instruments that Westbook had classified under these objectives were identified by the ETS project staff as prototypes for measures to be developed. Fifty-six prototype items were identified in this way, three of the goals being tentatively defined by 16 items each, and the fourth goal by eight items. The ETS project staff proposed that additional items similar to these four sets of prototypes be written and pretested, in order to obtain reliable measures of the four EBCE program goals judged congruent with objectives common to other career education programs.

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*In a later step Westbrook submitted his classifications to the senior authors of the instruments in question, and received general approval of the classifications.

Figure 2. CAREER DEVELOPMENT TESTS ANALYZED BY DR. BERT WESTBROOK

1. Career Development Inventory (Form 1),

   Donald E. Super and Davis J. Forrest; Teachers College, Columbia University, New Yor, NY 10027; copyright 1972.

2. Career Maturity Inventory (Form A-1),

   Competence Test and Attitude Scale, John O, Crites, Ph.D.; CTB/McGraw-Hill, Del Monte Research Park, Monterey, CA 93940, copyright 1973.

3. Assessment of Career Development

   Dale Prediger, Bert Westbrook, and John Roth; Houghton Mifflin Company, American College Testing Program, Palo Alto, CA 94304; copyright 1973.

4. New Mexico Career Education Test Series

   N. M. Knowledge of Occupations Test, N. M. Career Planning Test (Form A & B), N. M. Career Development Test, N. M. Job Application Procedures Test, Charles Healy and Stephen Klein; Monitor, Hollywood, CA 90028, copyright 1973.

5. Cognitive Vocational Maturity Test

   Bert Westbrook, Joseph Parry-Hill Jr.; Department of Psychology, North Carolina State University at Raleigh, 1973. Raleigh, NC 27606.

6. ETS Guidance Inquiry

   Martin Katz; Educational Testing Service, Princeton, NJ, copyright 1958.

The staff of only one of the four EBCE projects responded in writing to this proposed approach, and this response was generally negative. In a meeting of the evaluation staff of all four projects held in February 1975, however, the consensus was that no acceptable paper and pencil measures of the EBCE goals based upon prototype items of the kind presented by ETS could be developed. The principal reason for rejection of these item types was that they appeared to be based upon an assumption that there is a single right answer to problems of career choice and career adjustment. EBCE staff members indicated that such an assumption was contrary to the spirit and purpose of EBCE as an alternative career education program. ETS staff then recommended that an in-depth student interview schedule be developed as the only procedure that could provide satisfactory information about the attainment of the EBCE program objectives. This recommendation was accepted.

## Final Student Outcomes Instrumentation

In any evaluation plan, the cooperation of those who have responsibility for the welfare of the students is essential if information is to be obtained from students, parents, and others involved in the program being evaluated. In view of the rejection of the proposed systematic observation and common student outcomes assessment strategies by the NIE and EBCE school staffs, it seemed evident that the end-of-year student interview would be the only means by which any data regarding important student outcomes and relevant processes (other than that provided by the ethnographic studies) could be obtained. Although the limitations of this procedure were known, the time expended in exploring and negotiating the various alternatives had been so extensive that ETS staff concluded that they had little choice but to discontinue work on the alternatives and to focus solely on the design of this interview schedule, if any information was to be obtained.

Chapters 3, 4, and 5, and the tables and figures contained therein provide the rationale for development, description, and psychometric properties for the interview schedule.

# CHAPTER 3

## RATIONALE AND DESCRIPTION OF CURRENT STUDENT INTERVIEW

The time required for the various instrument searches and preliminary instrument development efforts was such that planning for the in-depth student interview was not initiated until well after the school year had started. Thus, there was no possibility of interviewing students at or near the beginning of the school year. The decision was made, therefore, that the principal focus of the interview would be directed to asking the students to discuss their end-of-year career plans and knowledge, and their self-ratings on characteristics thought to be important to career choice and success. The secondary focus of the interview was on descriptions of the processes that the students believed had been most useful to them in arriving at their present stage of career planning.

Many of the decisions regarding the in-depth student interview were based on the knowledge that the effects of enrollment in an EBCE school program for one year would be determined by a comparison of randomly assigned experimental and control groups. It seemed best, therefore, to plan an interview that was most likely to identify important learning on the assumption that the EBCE programs were effective, and to inquire about those activities that students had found to be useful in accomplishing the learning. The assumption about program effectiveness could, of course, be at least partially tested as part of the external evaluation study.

### Career Planning Model

In order to develop an interview schedule that would have at least content relevance to the intended student outcomes of the EBCE schools, it was judged necessary to have a model for career planning and selection that would be consistent with the purposes and procedures being employed in the EBCE projects. Such a model was developed after consideration of documents produced by the various projects, and the experiences and observations of the evaluation project staff in visits to the various sites. It was recognized that a wide range of models could be used appropriately with any one project, but that no one model would entirely fit any given project, let alone all

four projects. Therefore, the model was kept at the simplest and most general level, in order to try to cover what seemed to be the most common features of EBCE.

This simplified model is presented as Figure 3. Although it is presented as a series of ordered steps for purposes of discussion of the separate interview questions derived from it, no implication that the evaluation project staff views career planning and selection as a logical, linear process should be inferred. It is clear from both theory and from the rationale for the EBCE projects that the student experiences and preliminary decisions under each of these steps are highly interactive. Experience and information gained at any point in this career planning process should lead to revision and further testing of decisions made at any other point.

The major stages in the career planning model and some illustrative considerations and processes that might be involved at each stage are shown in the figure. These and other considerations and processes would, of course, vary widely in importance from one student to another, and from one EBCE school to another. Any of the processes listed on the right hand side might be used by students singly or in some combination to gain understanding or clarification of some or all of the various considerations listed on the left hand side for a given stage.

The diversity in age, experience, maturity, motivation, and oportunities of the students to be interviewed in this evaluation project was such that the interview schedule had to allow for the possibility that respondents could be in any of the first five stages described in the model. In fact, it seemed evident that they should be involved to varying degrees in combinations of these stages. However, the grade distributions for the students applying for admission to the EBCE schools indicated that relatively few of the respondents would have gotten as far as planning for immediate post-high school activities. Additionally, any questions directed to involvement in stages 6 and 7 would have to be hypothetical for virtually all students. In early drafts of the interview schedule, an effort was made to pose hypothetical questions relative to stages 6 and 7, in order to determine what considerations students currently thought would influence these later decisions. Preliminary tryout of the interview schedule led to the decision to eliminate these questions for several reasons. After due consideration, the operational form of the interview schedule was limited to the collection of information about student status within each of the first five stages in the career planning model.

Figure 3. INTERVIEW MODEL STAGES IN CAREER PLANNING

1. Obtain information about career areas of possible interest

| Considerations | Processes |
|---|---|
| Opportunities | Reading |
| Requirements | Group presentations |
| Rewards | Field trips |
| Restrictions | Discussion with adults |
| Supervision | Discussion with students |
| Advancement | Part time jobs |
| Interests | On-the-job experience |

2. Clarification of self-image

| Considerations | Processes |
|---|---|
| Values | School experiences |
| Goals | Leisure time experiences |
| Interests | Association with peers |
| Abilities | Association with adults |
| Resources | Work experiences |

3. Combine information about self and careers

   Internalized process involving undefined considerations

4. Investigate one or two specific careers

   Same considerations and processes described in Step 1

5. Plan for immediate next steps in context of high school or post-high school opportunities

| Considerations | Processes |
|---|---|
| Available options | Reading |
| Available resources | Discussion with adults |
| Tentative career choices | Discussion with peers |
| Long term goals | Trial and error investigation |
| | Summaries of past experience |

6. Choice of initial job

| Considerations | Processes |
|---|---|
| Opportunities for employment | Various |
| Qualifications for employment | |
| Consistency with goals | |
| Financial obligations | |

7. Change jobs or career fields

   Same as Step 6

As mentioned above, the interview was also intended to provide information on the processes which the students considered to be most important in helping them reach their current status. Further, it was to be used with students currently involved in the four different EBCE schools, each of which used different educational and instructional procedures, and with students enrolled in a large number of more conventional but unspecified high school programs. Therefore, the questions directed to the identification of most helpful processes had to be cast in terms free of cues that would direct responses toward a set of procedures employed in a particular setting. This resulted in the use of a number of free response questions about procedures, interspersed as appropriate among the questions described below.

When the interview was being planned and developed, a conceptualized plan for analysis of data to be collected with it anticipated organization and analysis of responses by grade in school and years of experience in the EBCE schools. The data were examined by grade at each of the schools, but no obvious relations were found because of the small numbers of students in each grade at each school. Data could be collected with respect to length of school experience at only two of the four EBCE schools, and are provided in Volume VI for these two schools.

The possible development of composite response "scores" to permit descriptions of career planning stages reached was also anticipated. The schedule and funds for the external evaluation project did not permit the kinds of exploratory analysis necessary to pursue this approach. Further, it now seems rather unlikely that a very elaborate analysis of available data would be justified. If a revision and further development of the interview could be undertaken, however, efforts to describe the planning stages reached by students might be useful. It would probably also be necessary to consider the interactions between stages of career planning reached, length of time in the program, and varieties of EBCE experiences within a particular program.

## Interview Description

The following description of the interview is taken from Volume VI, Chapter 2. The actual interview and schedule are presented in Appendix B of that volume.

The entire interview schedule in its operational form consisted of fifteen questions, although there were variations from project to project because of time limitations. Two general kinds of questions were included in the interview. Five questions of one kind were intended to obtain outcomes information about the progress the student had made in each of the stages of the career decision model. Seven questions (of a second kind) were intended to solicit information about those procedures--school and non-school--which were seen as most helpful in making this progress.

The fact that career decision making is such an idiosyncratic activity, and the personalized student focus of the EBCE schools indicated that the questions relevant to outcomes should be centered around careers or jobs currently of interest to the student being interviewed. In other words, given that the interview was to be oriented to career decision making, it seemed important to let each student choose the career topics around which the interview was to be centered. It was recognized that this individualized approach to the interview would make meaningful group analysis of the resulting data difficult to complete. Nevertheless, this appeared to be the only approach that would be consistent with the individualized nature of the EBCE schools.

The interview was opened with a brief explanation of its purpose, assurances about the confidentiality of the information provided, and a request for written consent that the interview be recorded on tape. If a student did not wish to have the interview recorded, the interviewer proceeded to the first question, with no indication that there was anything inappropriate about the refusal.

## Self-Reported Interest and Knowledge

In the first question, the students were asked to provide self-ratings of their interest and knowledge in each of twelve career areas. The question was intended to provide an indication of the extent to which students believed they had obtained information about career areas of possible interest, and the extent to which they might have begun to differentiate their interests. The twelve career groups used were those identified on the basis of the Project TALENT five year follow-up study (American Institutes for Research). The rating scales to be used ranged from 1 through 5, and the students were given the option of marking "Don't Know" for the interest rating. The form completed by the student is included in Appendix A of this volume.

When the interview schedule was developed, it had been hypothesized that EBCE students would mark "Don't Know" for fewer areas than the control group students, would show greater intrastudent variability in both interest and knowledge because they would be better able to differentiate among the areas, and would have a larger number of areas for which their self-reported interest and knowledge were consistently high. So few students in any of the groups for which data were analyzed chose "Don't Know" as a response, however, that it was not a useful indicator of any kind; and the intrastudent variability measures were found to have a very low (.23 - .41) internal consistency within the groups used for this study. Results of analyses of data from this question are presented in Tables 1 through 9 of Chapter 5.

First Career Interest and Useful Processes

When the students had provided these self-ratings, the second question asked was, "Is there a career or way of making a living, that you think you might be particularly interested in now?" The answer was noted, and the third question was posed: "I'd like to know how you learned about this career. What are some of the things you've done to learn about [career name]?" This was the first of the questions designed to learn what students had found to be useful to them in learning about careers.

This question was stated to allow for entirely free responses to avoid possible cueing of responses of particular kinds. The interviewers were encouraged to do some probing if responses were not easily forthcoming, and most of them did probe. The suggestions for probing were structured in terms of the anticipated organization for coding of responses. For example, the first suggested probe was: "There are many ways students may learn about careers. Do you recall any activities at the Learning Center or employer sites [at school for the control group students] that enabled you to learn about this career?" Subsequent probing suggestions were directed to activities outside of the school, and to whether the students had done any reading that had been helpful to them in learning about the career of interest. The interviewers were also asked to seek some corroborating evidence in support of the activity named as being helpful. For example, after the probing instructions directed to reading were given, the interviewer was told: "If a student says 'Yes', probe for the kinds of reading and the number of citations or titles."

As explained below, this same set of questions about activities useful in learning about careers was asked after students had named a second career of interest to them, if they had a second choice. The free responses from both sets of questions were coded using categories developed for each question on the basis of a sample of student interviews. These categories are defined in the introduction to Chapter 4, where data on the reliability of the coding for a sample of the respondents are presented.

Career Requirements Knowledge

When the information relative to activities useful in learning about the first career of interest had been obtained, the student was asked in question 4 to identify the requirements for the career. To obtain this information, the student was given a form (included in Appendix A) listing 56 educational, personal, and other characteristics that might be requirements for the career of interest, and was asked to mark each of these as "Necessary" or "Helpful for Advancement" or "Not Necessary" or "Don't Know". The suggested wording the interviewer was to use in presenting this question was:

> "I know that you probably haven't had time to learn all you would like to know about the requirements for this career. I'd like you to tell me, though, what you think some of the requirements are, based on the information you have been able to gather so far. [Give the student a copy of the Career Requirements Sheets, which are printed on green paper.] These sheets have a list of characteristics or requirements. Obviously, there is no career that requires them all. Some careers may require very few of them. And for many careers there is very little known by anyone about what the requirements are. Would you go through the list, thinking in terms of this career in which you have expressed interest, and indicate whether you think an item is Necessary for entrance and success, or Helpful in Gaining Advancement, or Not Necessary. Of course, in many instances you may say that you "Don't Know." There will be no penalty for you in giving such a response. Don't feel that you have to spend a great deal of time on this, but I would like you to indicate what you think or know about these characteristics as they relate to this career."

At the time this question was prepared, it was hypothesized that EBCE students would be better informed about the requirements for the careers of interest than would the control group students, or at least they would make fewer incorrect resonses. In planning for the use of the student information, it was speculated that for students who have varying opportunities and amounts of time to learn about careers there could be four different kinds of career requirements knowledge: information and misinformation about what is necessary; and information and misinformation about what is not necessary. Thus, prior to analysis of the data for comparing EBCE and other students, some of the implications of the use of one or more of these scores were explored. This score development work was further complicated by the fact that students responded for careers of their choice, and by the very real difficulty of determining what characteristics are and are not necessary for entry in a particular career or job. The details of the exploratory development work done to obtain career requirements scoring keys, rules for obtaining scores, analyses of the various scores considered, and estimated reliabilities are described in Chapter 5. Data from various analyses are included in tables in that chapter.

## Second Career Choice Questions

In the fifth question, students were asked: "Is there a second career that you think you might also be interested in? Would you say this is as interesting as the career we just talked about, or would it be a second choice?" Of course, the second of these questions was not asked if the answer to the first was "No", as was true for some students.

The next two questions were the same as questions 3 and 4 discussed above, but directed to the second career named. They were not asked if the student did not name a second career.

Question 8 asked the student to tell some of the reasons why the first named career was preferred over the second, if that were the case, or to say what would be considered in making a choice, if the two careers were presently of equal interest. As with questions 6 and 7, this was asked only if a student had a second career of interest.

Student Self-Image Ratings

After the students had completed the information about their second career of interest, they were asked in question 9 to rate themselves as being "High", Average" or "Low" on the same 41 personal characteristics that had been used on the Career Requirements form. (The Career Requirements form had 56 characteristics listed, but 15 of these were educational or other characteristics.) The students were to make these self-ratings first using "Others in Your Age Group" as a referent, then to make them using "Adults You Have Known" as the referent. For both referent groups, students also had the option of marking "Don't Know or Not Sure." The form completed by the student in response to this question is included in Appendix A.

This rating form was included to obtain information that: might be of use in addressing the program goals related to improved self-knowledge as a result of the EBCE processes; would reflect the increased opportunities EBCE students had to become acquainted with a more diverse group of adults; and could be used to examine consistency between student understanding of personal strengths and weaknesses and their choice of careers. This kind of self-rating was admittedly a somewhat superficial approach to such complex questions, but no other device appeared to be available for these purposes, given the restrictions operating in the external evaluation project.

At the time the interview schedule was developed, it had been hypothesized that the EBCE students would choose "Don't Know" as a response less frequently than would control group students. Because of the nature of the instrument, no more sophisticated hypothesis relevant to the goal of improved self-understanding seemed warranted. So few students in any of the groups chose this response, however, that this indicator of self-understanding does not appear to be useful for testing any hypothesis.

Counts of the characteristics on which the ratings relative to peers were higher than those relative to adults were obtained. Similarly, counts were obtained of characteristics on which the ratings relative to peers were lower than those referenced to adults. The third of the purposes to which this rating was directed, that of examining consistency between self-ratings and requirements for careers of interest, was approached by simply obtaining counts of the number of characteristics on which students rated themselves high which they thought were "Necessary" for their first career of interest, and counts of characteristics on which they rated themselves

low which they thought to be "Not Necessary". Further discussion of the analyses of responses to this question, and data used in the analysis, are provided in Chapter 5.

The next question (question 10) asked students to go through the list of personal characteristics used in the self-ratings, and to make with a "+" those on which they thought they had changed in a positive direction during the past year, and to mark with a "-" those on which they thought they had changed in a negative direction. Students were asked to leave blank those characteristics for which they thought there had been no personal change.

## Student Plans and Opinions

Question 11 was concerned with student plans for the next year. The question varied, depending on whether students were in the 12th grade or in lower grades. It also branched depending on whether they would be continuing in full-time education, working full- or part-time, and so on. Data from this question are presented in Volume VI, and no further discussion is included here.

The last question in the interview had to vary in detail for the EBCE and control group students, but, in effect, students were asked if they would still apply for admission to the EBCE school if they had a chance to reconsider their application, and what some of the reasons attached to this decision would be. The reasons were coded as being pro or con with respect to the EBCE and conventional schools. Information on reliability of the coding is presented in Chapter 4.

## Interviewer Rating

The interviewers were asked to make two kinds of ratings of the students as soon as possible after the interview was completed, if time and the circumstances for the interview permitted. One was a rating on Oral Communication Skill. This was one of the program objectives that appeared to be given considerable stress by all four projects, and the student interview seemed to provide an excellent opportunity to assess these skills in a fairly realistic setting. The second rating was concerned with the student's Career Planning Attitude. This attitudinal objective also appeared to be given weight by all of the projects, although the definition of the attitude domain was somewhat vague. Information on the reliability of these ratings is presented in Chapter 4.

# CHAPTER 4

## AGREEMENT BETWEEN CODERS OF PROCESS DESCRIPTION STATEMENTS AND BETWEEN RATERS OF STUDENT OUTCOMES

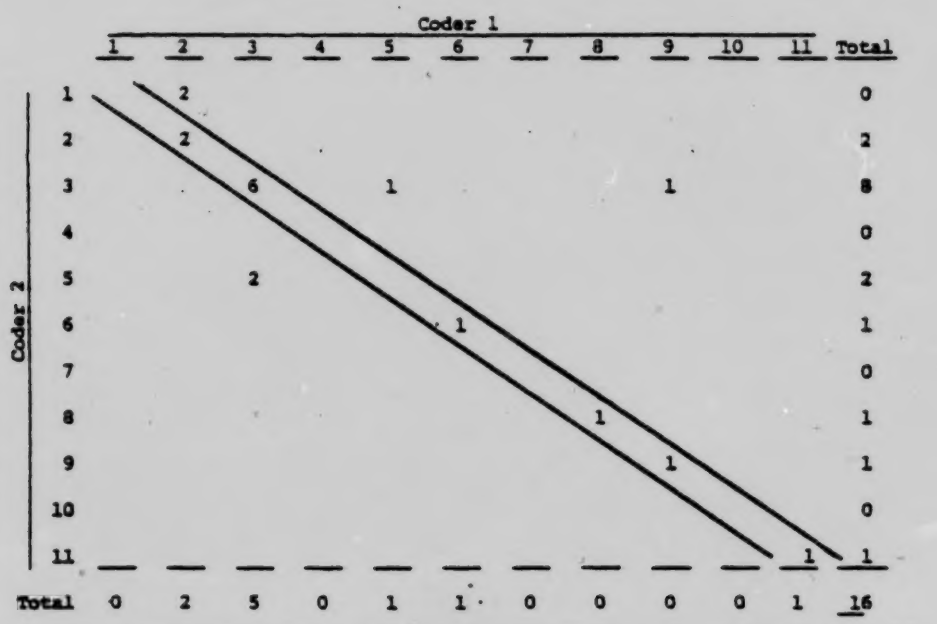
In the description of the in-depth interview schedule presented in Chapter 3 it was noted that some of the questions were intended to find out what activities had been most useful to students in learning about careers of interest. These questions were posed in a free response form, and the answers had to be coded by ETS staff using the notes made by the interviewer on the interview record form. Coding categories were established and refined using data from a systematic sample of early returns of interview records. The categories were tentatively defined on the basis of quick reading of a few records. These draft categories were then used by three persons reading a few forms independently, following which the categories were refined further. Finally, the three persons each read and applied the categories to 20 interview records, analyzed reasons for the disagreements in ratings that occurred, and established the final definition of the coding categories.

Two of the three persons who had participated in the definition of the coding categories then coded all the interview records as they were received, but any interview record was coded by only one of these two; that is, no interview record was coded by more than one person. In this final coding process, the interview records that had been first used in the derivation of the coding categories were recoded as they were reached when the records were put in ID number order. None of the "trial codings" used in establishing the categories were used.

Some weeks after the entire coding operation had been completed for all students in the study, a random sample of 24 interview records was drawn, six from each of the four schools, with attention to inclusion of both EBCE and control group students. The coders who had done the operational coding recoded the records originally coded by the other person, with no knowledge of what operational codes had been assigned.

The joint distributions of the two sets of codes are presented in the Figures 4-6 for Program Generated Experiences, Reading, and Products and Accomplishments respectively.

Figure 4. JOINT DISTRIBUTION OF INDEPENDENT CODINGS OF STUDENT FREE RESPONSES: PROGRAM GENERATED ACTIVITIES



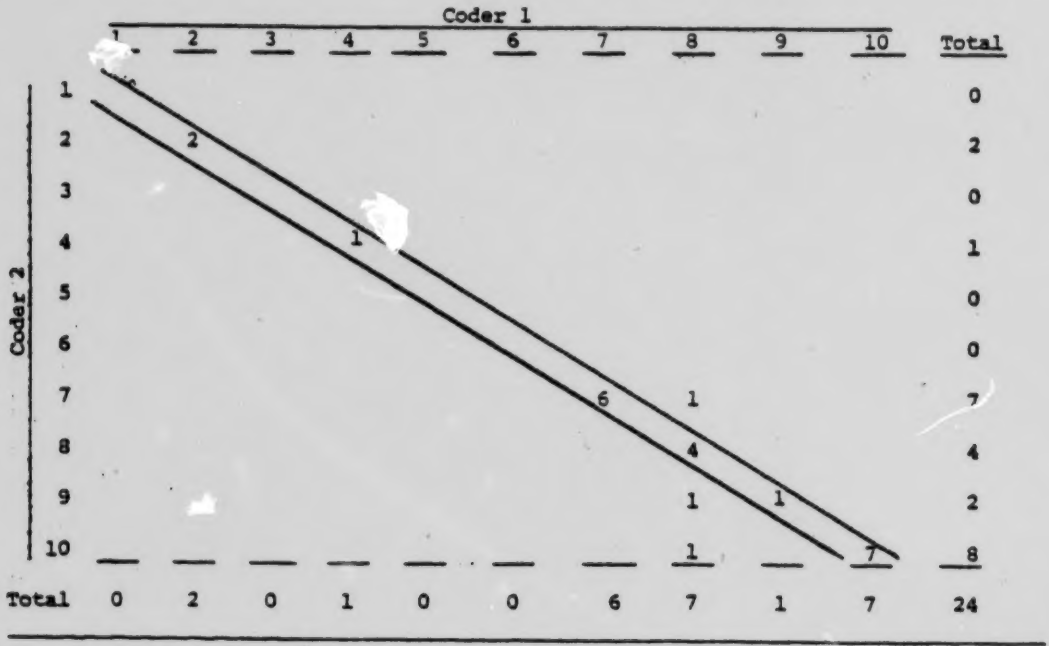

Eight students in the coding study sample were members of the control group; their responses could not be coded for program generated activities.

Percent Agreement, 75%

Category Definitions

1. Three or more experience sites for extended periods of time
2. Two experience sites for extended periods of time
   Two experience sites for 10-20 hours
3. One experience site for extended period of time
4. Two or more extended experience sites plus one or more visits to other sites
5. One extended experience site plus one or more short visits to other sites
6. One site for 10-20 hours
7. Several orientation or exploration visits to different sites
8. One orientation or exploration visit
9. Formal classes in other schools, churches, etc.
10. Other or uncodable
11. No program generated experiences

Figure 5. JOINT DISTRIBUTION OF INDEPENDENT CODINGS OF STUDENT FREE RESPONSES: PROGRAM GENERATED READING

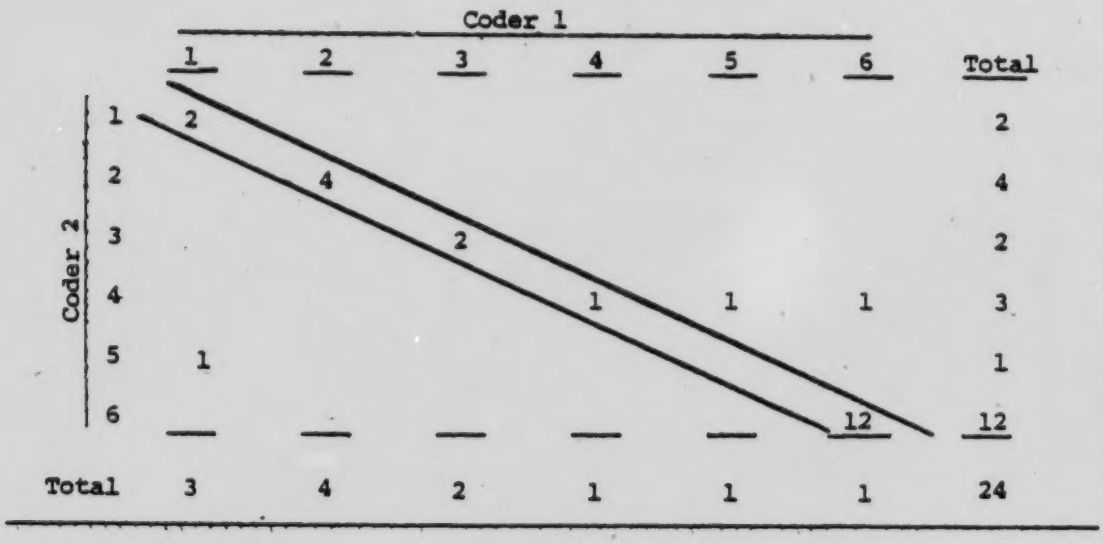



Percent agreement, 88%; Percent agreement, excluding 10-10's, 82%

Category Definitions

1. At least two books, titled, plus other books, pamphlets, or magazines
2. At least two books, titled
3. One book titled, plus other books, magazines, or pamphlets
4. One book, titled
5. Magazines, pamphlets, career guides
6. Magazines only
7. Pamphlets only
8. Yes, with no detail
9. Other or uncodable
10. None

Figure 6. JOINT DISTRIBUTION OF INDEPENDENT CODINGS OF STUDENT FREE RESPONSES: PROGRAM GENERATED PRODUCTS AND ACCOMPLISHMENTS




Percent agreement, 88%. Percent agreement, excluding 6-6's, 75%.

Category Definitions

1. Product from school or EBCE activity
   Product from outside, self-generated activity
   Group product, either school or non-school

2. Report other than activity report or project report
   Activity or project report, or exploration package

3. Specific mention of learning or improvement of skill

4. Specific statement of plans for future, other than continuing relationship with RP

5. Other

6. None

## Ratings of Career Focus and Experience

When the interview records were coded for operational use, the coders also assigned ratings of the student with respect to their career focus and experiences, as judged from the total free response interview records. (Scores obtained from the various forms the student completed in the interview were not known by the coders, since one possible analysis planned at the time was to relate these scores to the career focus and experience ratings.) In order to estimate the inter-coder agreement for these ratings, this rating was made a second time as part of the study of coding reliability. The data obtained for the independent ratings of career focus and experience are presented in Figure 7. The sample of 24 students used for the coding study was augmented with an additional 12 students, chosen randomly because the increased complexity of the rating task seemed likely to result in relatively more random errors in the data.

## Ratings of Student Opinions About EBCE Schools

Students were asked if they would reenroll in the EBCE school if they had an opportunity to do it over again, and then were asked to give their reasons. The reasons were classified under major headings generated essentially by the words students used, which frequently were quite similar. In the classification of reasons, extensive use was made of the category "Other", however, and no effort was made to check on the reliability of the classification of this broad category of reasons. During the coding the coders also categorized the reasons as being positive or negative about the EBCE school, or being positive or negative about the conventional school, regardless of the specific reasons given. In the study of the reliability of the coding operations, the reliability of the positive and negative tones or import of the statements was studied. The results are presented in Figure 8.

## Ratings of Oral Communication and Career Planning Attitude

Finally, in an effort to assess oral communications skills and career planning attitudes, both of which appeared to be important foci for the EBCE activities, the interviewers were asked to rate the students on two scales (Oral Communication and Career Planning Attitudes) as soon as possible after the interviews were completed. In an effort to estimate the inter-rater reliability of these ratings, a second rating was made for 21 of the students interviewed. This second rating was made by a staff member

Figure 7. JOINT DISTRIBUTION OF INDEPENDENT RATINGS OF CAREER FOCUS AND EXPERIENCE

| Second Rating \ First (Operational) Rating | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 4 ② | | ① | | | 1 | | | ① | | 18 |
| 2 | | 4 | | | | | ① | | | | | 5 |
| 3 | | | 2 | 1 | | | | | | | | 3 |
| 4 | | ① | | | | | | | | | | 1 |
| 5 | | | | | 1 | | | 1 | | | | 2 |
| 6 | | | | | | | | | | | | 0 |
| 7 | | | | | | | 4 | | 1 | | | 5 |
| 8 | | | | | | | | | | | | 0 |
| 9 | | | | | | | | | 2 | | | 2 |
| 10 | | | | | | | | | | | | 0 |
| 11 | | | | | | | | | | | | 0 |
| Total | 11 | 9 | 2 | 2 | 1 | 0 | 6 | 1 | 3 | 1 | 0 | 36 |

Percent agreement 67%
Percent agreement within one point 81%

Note: 50% of the "off-diagonal" frequencies represent students from one of the four EBCE schools; these six frequencies have been identified by the circles. It is possible that these ratings are not appropriate to the program at this school.

Category definitions are presented on the following page.

Figure 7. Continued

JOINT DISTRIBUTION OF INDEPENDENT RATINGS
OF CAREER FOCUS AND EXPERIENCE

1. Two careers of interest, relevant experiences for both.
2. Two careers of interest, relevant experiences for one.
3. One career of interest, relevant experience.
4. One career of interest prior to EBCE application, relevant experience.
5. Interests pursued without career focus, relevant experience.
6. Avocational interest or hobby pursued on student initiative.
7. Potential career interest, but little or no experience.
8. No career focus, but some potentially useful experience.
9. No career focus, no experience, no thought about career planning.
10. Confusion about careers, little or no experience that might be helpful.
11. Inadequate information to categorize

Figure 8. JOINT DISTRIBUTION OF INDEPENDENT CLASSIFICATIONS OF STUDENT OPINION ABOUT EBCE SCHOOL

| Coder 2 \ Coder 1 | Pro EBCE | Anti EBCE | Pro Public | Anti Public | Can't Classify | Total |
|---|---|---|---|---|---|---|
| Pro EBCE | 13 | | | | | 13 |
| Anti EBCE | | 1 | | | | 1 |
| Pro Public | | | 1 | | | 1 |
| Anti Public | | | | 1 | 1 | 2 |
| Can't Classify | 2 | | | | 3 | 5 |
| Total | 15 | 1 | 1 | 1 | 4 | 22 |

Two students in the coding study sample gave no opinions about the EBCE school.

Percent agreement, 86%

in the Western Office of ETS, using tape recordings of the interviews as conducted at two of the four schools. (Tape recordings were not permitted by staff at one school to be used for this reliability study. In the second, ratings were not made by the interviewers, by direction of the school staff.) The quality and audibility of the tape recording was an important factor in the selection of the study sample, but students from both the experimental and control groups at each of the two schools were included in the sample. Students were chosen for inclusion in the sample on the basis of a digit in the student ID number, and so far as was known, there was no bias introduced as a result of the use of tape recordings.

The joint distributions of the two independent ratings are presented in Figures 9 and 10. The definitions of the points on the two rating scales are presented with the corresponding figures. Except for request that the interviewers make the ratings and the definitions of the rating points, no further directions were offered for the interviewers or for the ETS staff member who made the second rating.

Figure 9. JOINT DISTRIBUTION OF INDEPENDENT RATINGS OF STUDENT ORAL COMMUNICATION SKILLS

| Second Rating \ First (Operational) Rating | 1 | 2 | 3 | 4 | Total |
|---|---|---|---|---|---|
| 1 | 3 | | | | 3 |
| 2 | 1 | 4 | 6 | | 11 |
| 3 | 1 | 1 | 3 | 1 | 6 |
| 4 | | | | 1 | 1 |
| Total | 5 | 5 | 9 | 2 | 21 |

Percent agreement 52%
Percent agreement within one point 95%

## Category Definitions

1. High

   Student gave well organized, relatively brief responses to the questions asked. The need to ask for clarification of responses arose seldom, probably not more than three times during the interview.

2. Above Average

   Student responses were generally to the point, and not too lengthy. Request for clarification of ideas was made fairly frequently, but the initial response was sufficiently clear that the requests were directed to specific points.

3. Adequate

   The student gave answers that were generally to the point, but they were either rambling or seemed to be quite incomplete. Request for clarification was made often, and in some instances could not be directed to specific points because the original response was too vague.

4. Low

   The student had very great difficulty in expressing himself. Responses were either rambling, or so short and uncommunicative that his ideas simply didn't get across. Few requests for clarification were made, because there was no basis for posing a question or reflecting what had been said.

Figure 10. JOINT DISTRIBUTION OF INDEPENDENT RATINGS OF STUDENT CAREER PLANNING ATTITUDES

| Second Rating \ First (Operational) Rating | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 1 | | | | | | 3 |
| 2 | 1 | 1 | 1 | | | | | 3 |
| 3 | | 4 | 2 | 1 | | 1 | | 8 |
| 4 | | | 2 | | | | | 2 |
| 5 | | | 1 | 1 | | | | 2 |
| 6 | | | | 2 | | | | 2 |
| 7 | | | | | | | | 0 |
| Total | 3 | 6 | 6 | 4 | 0 | 1 | 0 | 20 |

Percent agreement 25%
Percent agreement within one point 75%

Note: Category definitions used to develop these ratings are presented on the following page.

Career Planning Attitude Ratings Definition

*1. Positive

The student appeared to be interested in discussing occupational and career plans and choices, or in talking about what he had done and learned relevant to career planning. Statements indicated that he would continue to assess occupational characteristics and opportunities, and would continue to seek clarification of his own attitudes, interests, and progress. The student appeared to be open to the possibilities of future changes in society, technological changes, and resulting changes in career opportunities. He appeared to be enthusiastic, or at least interested in some future prospects. Some statements indicated a feeling that an individual could make at least some choices among a variety of occupations.

4. Neutral

The student showed some interest in discussing occupational or career plans, but for the most part he views choices as being made only within a limited range of careers as defined at this time. Career planning and choice are seen largely within the context and time span represented by the formal educational years - either high school, or high school plus immediate next education or training. There is little evidence of serious thought beyond the next two or three years. Some of the statements or phrases used sound as if they may be repititions of what has been read, or what the student has been told about career planning, with little indication that implications of these statements for the future have been considered. There is some feeling that most of the control over career opportunities and choices is external.

7. Negative

The student shows little or no interest in discussion of career and occupational plans. Nearly all the statements about career planning have explicit or implied negative connotations. Some statements indicate that the student will generally wait to see what options are available at the time a specific career or occupational decision has to be made. Statements about long-term goals are at best very general; e.g. "Have a good paying job." or "Be able to do what I like." and so on. The student indicates a rather strong feeling that the available career choices are determined by external factors in society, the national economy or other vaguely defined influences.

*Ratings are to be made on a seven point scale; these are descriptions of the two end points and the mid-point, and this is reflected in these numbers.

Figure 10. Continued

# CHAPTER 5

## ANALYSES OF THE INTERNAL CONSISTENCY AND INTER-CORRELATIONS OF VARIOUS QUANTITATIVE MEASURES OF EBCE OUTCOMES

The in-depth interview included the completion by the students of a number of forms which were designed to permit possible quantitative analyses of outcomes judged to be important in career education programs. The lack of time available for developing and pre-testing the interview, and the uncertainties about the kinds of responses that would be obtained in four different schools, each stressing personalization or individualization of instruction, meant that a great deal of exploratory work and revision of analysis plans had to go on after the data were collected. The results of those efforts that could be organized and summarized quantitatively in the time available are presented in this chapter.

These data were used extensively in arriving at final decisions about the use and presentation of the information included in Volume VI. It will be evident that consideration was given to the use of many indicators that, in fact, were not used ultimately. The reasons for many of the decisions are not set forth here in the interests of conserving space. Probably no decision was based on consideration of the data alone. Many decisions were tempered by considerations of the rationale underlying the EBCE approach (as understood by ETS staff), the reasonableness of untestable assumptions that had to be made in the data analysis, and factors which affected the kinds of data collected.

It is hoped that the information presented here might give some indication of the kinds of thinking that went into the final selection of information to be presented in the report itself.

In view of the differences among the four schools, with respect to detailed purposes, procedures, and student body characteristics, virtually all of the analyses were both carried out and presented here separately for each school. In arriving at decisions about information to be presented in the evaluation report itself, however, data had to be combined, or pooled, since the decisions were directed to the preparation of a single report. This combination or pooling was done solely for the purpose of making judgements about the quality and usefulness of the information. It was not intended as part of the task of evaluating the school programs themselves.

## Estimated Reliabilities and Correlation Coefficients for Student Reported Career Area Interest and Knowledge

The estimated reliabilities of the student reports of interest and knowledge in each of the twelve career areas as defined in the Project Talent five-year follow-up were obtained by calculating the various counts or scores using alternate career areas. Since the career areas are empirically determined to be somewhat independent, these alternate halves are in no way parallel, but this seemed to be the most feasible way of obtaining some estimate of the reliability of the information provided by the students. Data obtained by this procedure are presented separately for each project, and for all projects combined in Tables 1 through 4.

These reliability data are summarized in Table 5. Estimates of the reliability of counts or scores on all twelve areas as obtained using the Spearman-Brown prophecy formula are also shown. These estimated reliability coefficients vary from project to project, in part because of the differences in the standard deviations for each project. Therefore, the reliability estimates have also been computed for each project using a common standard deviation, based on the within groups standard deviation.

Considering the estimated reliabilities of the various counts and scores, it appears that the following are sufficiently reliable and relatively free of skewness to justify their use in project evaluation: 1. Number of areas in which there is no interest; 2. Number of areas in which students report no knowledge; 3. Number of areas in which students report both high interest and high knowledge; 4. Average interest rating; and 5. Average knowledge rating.

The intercorrelations of these five measures are presented in Tables 6 through 9 separately for each project.

TABLE 1

STATISTICS FOR SELF-RATINGS OF INTEREST AND KNOWLEDGE
IN ALTERNATE CAREER AREAS

McGwigan and Kanawha County Schools (N=64)

| | | Half 1 | | Half 2 | | |
|---|---|---|---|---|---|---|
| | $r_{12}$ | Mean | Std. Dev. | Mean | Std. Dev. | $r_{S-B}$ * |
| No. of areas low interest | .60 | 2.1 | 1.7 | 1.9 | 1.4 | .75 |
| No. of areas low knowledge | .70 | 1.7 | 1.7 | 1.8 | 1.6 | .82 |
| No. of areas don't know interest | .47 | 0.1 | 0.3 | 0.1 | 0.3 | .64 |
| No. of areas high interest and knowledge | .37 | 0.9 | 1.0 | 1.2 | 1.3 | .54 |
| Average interest rating | .41 | 2.4 | 0.7 | 2.7 | 0.7 | .58 |
| Variance, interest ratings | .31 | 1.4 | 0.8 | 1.7 | 0.9 | .47 |
| Average knowledge rating | .62 | 2.5 | 0.8 | 2.6 | 0.8 | .77 |
| Variance, knowledge ratings | .19 | 1.1 | 0.8 | 1.2 | 0.7 | .32 |

* This correlation is a Spearman-Brown estimate of the reliability of the scores based on all twelve career areas.

TABLE 2

STATISTICS FOR SELF-RATINGS OF INTEREST AND KNOWLEDGE IN ALTERNATE CAREER AREAS

Far West School (N=88)

| | $r_{12}$ | Mean | Std. Dev. | Mean | Std. Dev. | $r_{S-B}$ * |
|---|---|---|---|---|---|---|
| No. of areas low interest | .62 | 2.2 | 1.6 | 2.0 | 1.4 | .77 |
| No. of areas low knowledge | .78 | 1.7 | 1.7 | 1.9 | 1.6 | .88 |
| No. of areas don't know interest | .84 | 0.1 | 0.3 | 0.1 | 0.4 | .91 |
| No. of areas high interest and knowledge | .52 | 1.0 | 1.3 | 1.1 | 1.3 | .68 |
| Average interest rating | .59 | 2.6 | 0.8 | 2.7 | 0.7 | .74 |
| Variance, interest ratings | .26 | 1.5 | 0.9 | 1.8 | 0.9 | .41 |
| Average knowledge rating | .75 | 2.6 | 0.9 | 2.6 | 0.8 | .86 |
| Variance, knowledge ratings | .36 | 1.1 | 0.8 | 1.3 | 0.7 | .53 |

* This correlation is a Spearman-Brown estimate of the reliability of the scores based on all twelve career areas.

TABLE 3

STATISTICS FOR SELF-RATINGS OF INTEREST AND KNOWLEDGE
IN ALTERNATE CAREER AREAS

Community Experiences in Career Education (N=35)

| | $r_{12}$ | Mean | Std. Dev. | Mean | Std. Dev. | $r_{S-B}$ * |
|---|---|---|---|---|---|---|
| No. of areas low interest | .24 | 1.8 | 1.6 | 1.5 | 1.4 | .39 |
| No. of areas low knowledge | .37 | 1.7 | 1.8 | 1.5 | 1.6 | .54 |
| No. of areas don't know interest | -.04 | 0.0 | 0.2 | 0.1 | 0.4 | - |
| No. of areas high interest and knowledge | .23 | 0.7 | 1.0 | 1.1 | 0.8 | .37 |
| Average interest rating | .43 | 2.5 | 0.7 | 2.9 | 0.7 | .60 |
| Variance, interest ratings | .08 | 1.2 | 0.8 | 1.6 | 0.8 | .15 |
| Average knowledge rating | .38 | 2.4 | 0.7 | 2.5 | 0.6 | .55 |
| Variance, knowledge ratings | .09 | 0.9 | 0.6 | 1.1 | 0.8 | .17 |

* This correlation is a Spearman-Brown estimate of the reliability of the scores based on all twelve career areas.

TABLE 4

STATISTICS FOR SELF-RATINGS OF INTEREST AND KNOWLEDGE IN ALTERNATE CAREER AREAS

Academy for Career Education (N=51)

| | $r_{12}$ | Mean | Std. Dev. | Mean | Std. Dev. | $r_{S-B}$* |
|---|---|---|---|---|---|---|
| No. of areas low interest | .62 | 2.2 | 1.7 | 2.5 | 1.7 | .77 |
| No. of areas low knowledge | .67 | 1.4 | 1.6 | 2.1 | 1.8 | .80 |
| No. of areas don't know interest | .49 | 0.1 | 0.3 | 0.1 | 0.2 | .66 |
| No. of areas high interest and knowledge | .47 | 1.2 | 1.2 | 1.0 | 1.2 | .64 |
| Average interest rating | .57 | 2.6 | 0.8 | 2.4 | 0.8 | .73 |
| Variance, interest ratings | -.15 | 1.6 | 0.9 | 1.5 | 0.9 | - |
| Average knowledge rating | .63 | 2.7 | 0.8 | 2.5 | 0.9 | .77 |
| Variance, knowledge ratings | -.24 | 1.0 | 0.6 | 1.2 | 0.6 | - |

* This correlation is a Spearman-Brown estimate of the reliability of the scores based on all twelve career areas.

TABLE 5

RELIABILITY ESTIMATES FOR SELF-RATINGS OF INTEREST AND KNOWLEDGE USING ALL AREAS

| | $r_{S-B}$ | Std. Dev. | Estimated within Group Reliability |
|---|---|---|---|
| No. areas, low interest | | | |
| Project 1 | .75 | 2.80 | .74 |
| Project 2 | .77 | 2.69 | .78 |
| Project 3 | .39 | 2.39 | .54 |
| Project 4 | .77 | 3.04 | .72 |
| Within group std. dev. | | 2.76 | |
| No. areas, low knowledge | | | |
| Project 1 | .82 | 3.00 | .82 |
| Project 2 | .88 | 3.06 | .88 |
| Project 3 | .54 | 2.76 | .61 |
| Project 4 | .80 | 3.04 | .79 |
| Within group std. dev. | | 3.00 | |
| No. areas, don't know interest | | | |
| Project 1 | .64 | 0.51 | .70 |
| Project 2 | .91 | 0.67 | .87 |
| Project 3 | — | 0.40 | — |
| Project 4 | .66 | 0.48 | .75 |
| Within group std. dev. | | 0.56 | |
| No. areas, high interest and knowledge | | | |
| Project 1 | .54 | 1.88 | .58 |
| Project 2 | .68 | 2.20 | .60 |
| Project 3 | .37 | 1.41 | .68 |
| Project 4 | .64 | 1.99 | .67 |
| Within group std. dev. | | 1.97 | |
| Average interest rating | | | |
| Project 1 | .58 | 0.60 | .65 |
| Project 2 | .74 | 0.70 | .71 |
| Project 3 | .60 | 0.61 | .66 |
| Project 4 | .73 | 0.71 | .69 |
| Within group std. dev. | | 0.66 | |
| Variance, interest ratings | | | |
| Project 1 | .47 | 0.73 | .41 |
| Project 2 | .41 | 0.73 | .34 |
| Project 3 | .15 | 0.59 | .38 |
| Project 4 | — | 0.63 | — |
| Within group std. dev. | | 0.69 | |
| Average knowledge rating | | | |
| Project 1 | .77 | 0.73 | .78 |
| Project 2 | .86 | 0.79 | .84 |
| Project 3 | .55 | 0.58 | .72 |
| Project 4 | .77 | 0.76 | .76 |
| Within group std. dev. | | 0.74 | |
| Variance, knowledge ratings | | | |
| Project 1 | .32 | 0.64 | .23 |
| Project 2 | .53 | 0.66 | .43 |
| Project 3 | .17 | 0.57 | .25 |
| Project 4 | — | 0.41 | — |
| Within group std. dev. | | 0.60 | |

TABLE 6

INTERCORRELATIONS OF SELF-RATINGS OF INTEREST AND KNOWLEDGE

McGwigan and Kanawha County Schools (N = 65)

| | No. of Areas, Low | | No. of Areas High | Average | |
|---|---|---|---|---|---|
| | Interest | Knowledge | Inter. & Know. | Interest Rating | Knowledge Rating |
| No. of Areas Low Interest | 1.00 | | | | |
| No. of Areas Low Knowledge | .70 | 1.00 | | | |
| No. of Areas, High Interest and Knowledge | -.37 | -.39 | 1.00 | | |
| Average Interest Rating | -.85 | -.59 | .66 | 1.00 | |
| Average Knowledge Rating | -.63 | -.82 | .73 | .70 | 1.00 |
| Mean | 4.02 | 3.48 | 2.16 | 2.59 | 2.58 |
| Std. Dev. | 2.80 | 3.00 | 1.88 | 0.60 | 0.73 |

TABLE 7

INTERCORRELATIONS OF SELF-RATINGS OF INTEREST AND KNOWLEDGE

Far West School (N = 88)

| | No. of Areas, Low | | No. of Areas High | Average | |
|---|---|---|---|---|---|
| | Interest | Knowledge | Inter. & Know. | Interest Rating | Knowledge Rating |
| No. of Areas Low Interest | 1.00 | | | | |
| No. of Areas Low Knowledge | .46 | 1.00 | | | |
| No. of Areas, High Interest and Knowledge | -.44 | -.49 | 1.00 | | |
| Average Interest Rating | -.85 | -.46 | .70 | 1.00 | |
| Average Knowledge Rating | -.38 | -.84 | .74 | .55 | 1.00 |
| Mean | 4.16 | 3.65 | 2.14 | 2.63 | 2.58 |
| Std. Dev. | 2.69 | 3.06 | 2.20 | 0.70 | 0.79 |

TABLE 8

INTERCORRELATIONS OF SELF-RATINGS OF INTEREST AND KNOWLEDGE

Community Experiences in Career Education (N = 35)

| | No. of Areas, Low | | No. of Areas High | Average | |
|---|---|---|---|---|---|
| | Interest | Knowledge | Inter. & Know. | Interest Rating | Knowledge Rating |
| No. of Areas Low Interest | 1.00 | | | | |
| No. of Areas Low Knowledge | .62 | 1.00 | | | |
| No. of Areas, High Interest and Knowledge | -.30 | -.50 | 1.00 | | |
| Average Interest Rating | -.81 | -.61 | .45 | 1.00 | |
| Average Knowledge Rating | -.47 | -.86 | .77 | .54 | 1.00 |
| Mean | 3.23 | 3.29 | 1.80 | 2.70 | 2.45 |
| Std. Dev. | 2.39 | 2.76 | 1.41 | 0.61 | 0.58 |

TABLE 9

INTERCORRELATIONS OF SELF-RATINGS OF INTEREST AND KNOWLEDGE

Academy for Career Education (N = 51)

| | No. of Areas, Low | | No. of Areas High | Average | |
|---|---|---|---|---|---|
| | Interest | Knowledge | Inter. & Know. | Interest Rating | Knowledge Rating |
| No. of Areas Low Interest | 1.00 | | | | |
| No. of Areas Low Knowledge | .67 | 1.00 | | | |
| No. of Areas, High Interest and Knowledge | -.66 | -.61 | 1.00 | | |
| Average Interest Rating | -.91 | -.69 | .83 | 1.00 | |
| Average Knowledge Rating | -.70 | -.89 | .80 | .83 | 1.00 |
| Mean | 4.67 | 3.49 | 2.25 | 2.52 | 2.62 |
| Std. Dev. | 3.04 | 3.04 | 1.99 | 0.71 | 0.76 |

## Development of Career Requirements Scores

Initial effort in the development of indicators of knowledge of career requirements was directed to procedures that would permit obtaining scores for all students on the basis of the career/job they had chosen. The career of interest was defined not only on the basis of the name the student used for the career or job, but also on the basis of additional information given during the course of the interview. When a career or job designation had been determined from all this information, the student responses on the forms used to record the characteristics thought to be necessary, helpful, or not necessary to entry and success in the career of interest were "keyed".

For this purpose, extensive use was made of the following documents:

The Career Data Book: Results from Project TALENT'S Five-Year Follow-Up Study

Dictionary of Occupational Titles, Volume II

Occupational Outlook Handbook

In some instances, telephone calls were made to local unions, state employment agencies, and so on, to seek information on career/job requirements that could not be found in the documents listed above. When a student's response sheet had been "keyed", scores for incorrect information were obtained using a set of rules that had been developed during the course of the work on "keying".

Preliminary analysis of data obtained using these procedures indicated that this "individualized" approach was too dependent on the scorers' impressions obtained from review of the interview records, and on the availability and judgments of knowledgeable persons who could be located to provide information not found in the three documents used as primary sources for keys. In many instances, also, the students were so specific in describing their job interests that no general career requirements could be developed.

The decision was made, therefore, to try out a different set of procedures that would yield a single scoring key for a career/job by title. Data for students whose interviews had been completed at the time of this decision indicated that about 75% of the students named careers/jobs in approximately 35 "popular" areas, where popularity was defined as choice by four or more students in this initial group of students interviewed.

In order to determine whether career/job scoring keys could be developed with some reliability, two staff members were asked to develop scoring keys independently for the 17 most popular careers/jobs. The three source documents listed above were to be the sole reference for development of the keys. When a characteristic was keyed as necessary, helpful, or not necessary, the "keyer" was to note the reference and page number to document the keyed response. Keyers were also asked to note if the key had been derived by inference, as opposed to a precise statement in one of the documents. A set of keying rules was also prepared, and modified as necessary, during the keying process.

There were 59 characteristics that could potentially be keyed for any career/job, although there were no careers in which all 59 could be keyed. In other words, for any occupation, the keyers had to mark "Don't know" frequently, if no documentation could be found. The percent agreement between the two keyers was calculated for each of the 17 careers/jobs, and was found to average 82% when all 59 characteristics were used as a base. Since characteristics keyed as "Don't know" were not to be used in arriving at students' scores (i.e., not scored right or wrong regardless of a student's response), the percent agreement for scorable responses was also calculated and found to average 75% for one keyer and 88% for the second. The difference between them was a function primarily of the number of characteristics one person keyed as "Don't know."

This percent agreement seemed high enough to justify additional work. Two sets of scores, one for each of the two independent keys, were computed for every student who had chosen one of the 17 careers/jobs for which keys had been developed up to this point. Three of the four scores discussed in the body of the report were computed. No effort was made to resolve any differences between the keys at this point.

The following correlations between the scores yielded by each set of the keys were obtained. The variation in the numbers of cases shown for each correlation results from the fact that no percentage scores were calculated if fewer than four characteristics were keyed for a particular career/job, or if a student marked fewer than four characteristics in a particular category (necessary or not necessary).

| | Correlation Coefficient | N |
|---|---|---|
| Percent Correct Necessary | .91 | 71 |
| Percent Incorrect Necessary | .67 | 71 |
| Percent Incorrect Not Necessary | .64 | 47 |

On the basis of these data, the decision was made to continue the process of obtaining keys for the remainder of the "popular" careers/jobs. Although only the Percent Correct Necessary score appeared to be keyable with any really satisfactory reliability, the other scores were obtained because certain occupations (e.g., artist, musician, proprietor) had many more characteristics keyed as not necessary than as necessary. The decision was made to obtain all four scores to avoid a possible source of bias against students choosing such careers/jobs.

The additional keys were developed independently by two persons. All discrepancies between the two keys were resolved by a third person using a set of rules to eliminate some of the discrepancies, and using judgments based on review of the cited documentation of the keyed responses to eliminate the rest.

Keys were ultimately developed for 37 different careers/jobs. Thirty (81%) of these keys could be used to obtain first choice career requirements knowledge scores for all students. Twenty-nine (78%) of these keys could be used to obtain second choice scores. Scores on at least one career could be obtained for 93% of all the students. In addition to obtaining the data reported in the body of the study, additional data for subgroups of students were obtained. Distributions and correlation tables of the absolute and percentage scores were prepared separately for students grouped on the basis of whether they had chosen careers with relatively few keyed necessary characteristics (12 careers/jobs) or careers with a large number of keyed necessary characteristics. Distributions and correlation tables were also run separately for any career/job chosen by 10 or more students involved in the evaluation study.

These subgroup data were obtained in an effort to determine whether the intercorrelations among the various scores might differ for the subgroups. Inspection of the data suggested that there were no systematic differences. However, the small numbers of students in the various subgroups, and resulting unreliability of the statistics, were such that it is not possible to rule out the real possibility that the universes of the career requirements knowledge might be quite different for different subgroups.

## Estimated Reliabilities and Correlation Coefficients for Career Requirements Scores

Although there was no precise way of estimating the internal consistency of the various possible Career Requirements Scores, if the scores were measuring one or more aspects of a student's knowledge of the requirements of careers of interest, it should be expected that the scores obtained for the first and second choice careers should be positively correlated. These correlations could be obtained, of course, only for students who had indicated interests in two careers, and had completed the form concerning the career requirements for both of them. Further, they could be computed only if the student had chosen two careers for which scoring keys had been developed. The data in Table 10 show that 47% of the students had, in fact, met these conditions, with some variation from one project to another. Thus, it seemed appropriate to examine the correlations between the sets of scores obtained for the students' two career choices separately by project and for all projects combined.

The complete correlation matrices are presented in Tables 11 through 15. The correlations between first and second choice careers are those in the diagonal which starts at the intersection of the first column and fifth row. Since these correlation coefficients were moderately high, they seemed to justify investigation of the possible reliability of sets of scores obtained by computing the average of the scores for the first and second career choices. These reliabilities were estimated applying the Spearman-Brown correction formula to the correlation coefficients obtained between first and second choice scores. The estimates of the reliability of an average of the two scores obtained in this way are probably underestimates, since the Spearman-Brown correction assumes that the two career choice scores are parallel measures of the same trait, which, both logically and statistically, is probably not true in this instance. Nevertheless, this seemed the best procedure to follow in the absence of any feasible alternatives.

Relevant data for estimating the reliability of the averages of first and second career choice scores are presented in Table 16. The upper third of the table simply repeats the appropriate correlation information previously presented in Tables 11 through 15. The middle third of the table presents the Spearman-Brown estimates for the data as obtained. It can be seen from this portion of the table that there is considerable variation from one project to another in the estimated reliabilities.

TABLE 10

NUMBERS AND PERCENTAGES OF STUDENTS CHOOSING
KEYABLE AND NOT-KEYABLE FIRST AND SECOND CHOICE CAREERS

| Second Choice | First Choice: Keyable N | Keyable % | Not-Keyable N | Not-Keyable % | No Career N | No Career % | Total N | Total % |
|---|---|---|---|---|---|---|---|---|
| **Keyable** | | | | | | | | |
| Project 1 | 41 | 63 | 6 | 9 | 0 | - | 47 | 72 |
| Project 2 | 38 | 43 | 13 | 15 | 0 | - | 51 | 57 |
| Project 3 | 16 | 43 | 4 | 11 | 0 | - | 20 | 54 |
| Project 4 | 20 | 38 | 11 | 21 | 0 | - | 31 | 60 |
| All Projects | 115 | 47 | 34 | 14 | 0 | | 149 | 61 |
| **Not-Keyable** | | | | | | | | |
| Project 1 | 13 | 20 | 1 | 2 | 0 | - | 14 | 22 |
| Project 2 | 12 | 13 | 2 | 2 | 0 | - | 14 | 16 |
| Project 3 | 8 | 22 | 3 | 8 | 0 | - | 11 | 30 |
| Project 4 | 13 | 25 | 2 | 4 | 0 | - | 15 | 29 |
| All Projects | 46 | 19 | 8 | 3 | 0 | | 54 | 22 |
| **No Career Choice** | | | | | | | | |
| Project 1 | 3 | 5 | 1 | 2 | 0 | - | 4 | 6 |
| Project 2 | 18 | 20 | 4 | 4 | 2 | 2 | 24 | 27 |
| Project 3 | 4 | 11 | 2 | 5 | 0 | - | 6 | 16 |
| Project 4 | 6 | 12 | 0 | - | 0 | - | 6 | 12 |
| All Projects | 31 | 13 | 7 | 3 | 2 | 2 | 40 | 16 |
| **Totals** | | | | | | | | |
| Project 1 | 57 | 88 | 8 | 12 | 0 | - | 65 | 100 |
| Project 2 | 68 | 76 | 19 | 21 | 2 | 2 | 89 | 100 |
| Project 3 | 28 | 76 | 9 | 24 | 0 | - | 37 | 100 |
| Project 4 | 39 | 75 | 13 | 25 | 0 | - | 52 | 100 |
| All Projects | 192 | 79 | 49 | 20 | 2 | 1 | 243 | 100 |

TABLE 11

CAREER REQUIREMENTS SCORES CORRELATIONS

First and Second Choice Careers

McGwigan and Kanawha County School System

| | | First Choice | | | | Second Choice | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
| First Choice | Correct Necessary | 1.00 | | | | | | | |
| | Incorrect Necessary | -.38 | 1.00 | | | | | | |
| | Correct Not Nec. | .04 | -.43 | 1.00 | | | | | |
| | Incorrect Not Nec. | -.49 | .07 | .12 | 1.00 | | | | |
| Second Choice | Correct Necessary | .63 | -.18 | -.12 | -.39 | 1.00 | | | |
| | Incorrect Necessary | .13 | .52 | -.48 | -.10 | .17 | 1.00 | | |
| | Correct Not Nec. | -.22 | -.12 | .67 | .12 | -.32 | -.43 | 1.00 | |
| | Incorrect Not Nec. | -.26 | .15 | .31 | .23 | -.53 | -.24 | .27 | 1.00 |
| N* | | 41 | 41 | 27 | 41 | 41 | 39 | 32 | 39 |
| Mean | | 66.7 | 12.5 | 50.4 | 18.7 | 63.2 | 9.5 | 56.5 | 14.6 |
| Std. Dev. | | 21.1 | 12.4 | 22.1 | 11.5 | 25.5 | 7.7 | 28.1 | 12.6 |

*The numbers of students for computation of the correlation coefficients ranged from 21-41

TABLE 12

CAREER REQUIREMENTS SCORES CORRELATIONS

First and Second Choice Careers

Far West School

| | | First Choice | | | | Second Choice | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
| First Choice | Correct Necessary | 1.00 | | | | | | | |
| | Incorrect Necessary | -.12 | 1.00 | | | | | | |
| | Correct Not Nec. | .17 | -.54 | 1.00 | | | | | |
| | Incorrect Not Nec. | -.36 | -.06 | -.08 | 1.00 | | | | |
| Second Choice | Correct Necessary | .61 | -.10 | .09 | -.34 | 1.00 | | | |
| | Incorrect Necessary | -.11 | .29 | -.25 | -.02 | .33 | 1.00 | | |
| | Correct Not Nec. | .27 | -.26 | .43 | -.11 | .14 | -.36 | 1.00 | |
| | Incorrect Not Nec. | -.18 | -.16 | .10 | .32 | -.58 | -.23 | .12 | 1.00 |
| N * | | 38 | 38 | 33 | 32 | 38 | 38 | 30 | 32 |
| Mean | | 58.5 | 14.8 | 34.0 | 15.8 | 63.1 | 12.2 | 37.2 | 15.5 |
| Std. Dev. | | 24.8 | 9.4 | 26.2 | 11.6 | 22.6 | 8.6 | 28.7 | 14.7 |

*The numbers of students for computation of the correlation coefficients ranged from 24-38.

TABLE 13

CAREER REQUIREMENTS SCORES CORRELATIONS

First and Second Choice Careers

Community Experiences for Career Education

| | | First Choice | | | | Second Choice | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
| First Choice | Correct Necessary | 1.00 | | | | | | | |
| | Incorrect Necessary | -.24 | 1.00 | | | | | | |
| | Correct Not Nec. | .26 | -.34 | 1.00 | | | | | |
| | Incorrect Not Nec. | -.31 | -.06 | -.64 | 1.00 | | | | |
| Second Choice | Correct Necessary | .33 | -.18 | .15 | -.02 | 1.00 | | | |
| | Incorrect Necessary | .07 | .03 | -.77 | .58 | -.19 | 1.00 | | |
| | Correct Not Nec. | .09 | .07 | .48 | .01 | .26 | -.41 | 1.00 | |
| | Incorrect Not Nec. | .02 | .20 | -.05 | .13 | -.47 | .10 | .31 | 1.00 |
| | N* | 16 | 16 | 14 | 15 | 16 | 16 | 15 | 14 |
| | Mean | 64.8 | 12.3 | 40.6 | 15.7 | 63.9 | 14.4 | 46.4 | 14.4 |
| | Std. Dev. | 22.8 | 10.6 | 20.4 | 12.4 | 16.0 | 12.4 | 31.8 | 10.8 |

*The numbers of students for computation of the correlation coefficients ranged from 12-16.

TABLE 14

CAREER REQUIREMENTS SCORES CORRELATIONS

First and Second Choice Careers

Academy for Career Education

| | | First Choice | | | | Second Choice | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
| First Choice | Correct Necessary | 1.00 | | | | | | | |
| | Incorrect Necessary | -.29 | 1.00 | | | | | | |
| | Correct Not Nec. | .18 | .09 | 1.00 | | | | | |
| | Incorrect Not Nec. | -.52 | .05 | .31 | 1.00 | | | | |
| Second Choice | Correct Necessary | .44 | -.17 | -.23 | -.45 | 1.00 | | | |
| | Incorrect Necessary | -.27 | .04 | -.07 | .34 | -.37 | 1.00 | | |
| | Correct Not Nec. | .36 | .50 | .56 | -.10 | -.34 | -.27 | 1.00 | |
| | Incorrect Not Nec. | .09 | .15 | .51 | .13 | -.52 | .23 | .55 | 1.00 |
| | N* | 20 | 20 | 15 | 19 | 20 | 20 | 16 | 19 |
| | Mean | 65.8 | 11.0 | 36.5 | 13.4 | 65.4 | 13.0 | 37.2 | 11.8 |
| | Std. Dev. | 17.6 | 6.4 | 20.9 | 14.3 | 18.4 | 7.3 | 21.1 | 9.3 |

*The numbers of students for computation of the correlation coefficients ranged from 14-20.

TABLE 15

CAREER REQUIREMENTS SCORES CORRELATIONS

First and Second Choice Careers

All Projects Combined

| | | First Choice | | | | Second Choice | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
| First Choice | Correct Necessary | 1.00 | | | | | | | |
| | Incorrect Necessary | -.27 | 1.00 | | | | | | |
| | Correct Not Nec. | .17 | -.38 | 1.00 | | | | | |
| | Incorrect Not Nec. | -.41 | .01 | -.01 | 1.00 | | | | |
| Second Choice | Correct Necessary | .55 | -.13 | -.01 | -.34 | 1.00 | | | |
| | Incorrect Necessary | -.04 | .29 | -.40 | .10 | .09 | 1.00 | | |
| | Correct Not Nec. | .13 | -.11 | .56 | .02 | -.10 | -.40 | 1.00 | |
| | Incorrect Not Nec. | -.16 | .06 | .20 | .23 | -.54 | -.12 | .25 | 1.00 |
| N * | | 115 | 115 | 89 | 107 | 115 | 113 | 93 | 104 |
| Mean | | 63.6 | 13.0 | 40.4 | 16.5 | 63.7 | 11.7 | 45.3 | 14.3 |
| Std. Dev. | | 22.1 | 10.3 | 24.0 | 12.2 | 22.0 | 8.8 | 28.8 | 12.4 |

*The numbers of students for computation of the correlation coefficients ranged from 72-115.

TABLE 16

SUMMARY OF DATA FOR ESTIMATING
RELIABILITY OF CAREER REQUIREMENTS SCORES

| | Correct Necessary | | Incorrect Necessary | | Correct Not Necessary | | Incorrect Not Necessary | |
|---|---|---|---|---|---|---|---|---|
| **Correlation Coefficients for First and Second Choice Careers** | | | | | | | | |
| | r | N | r | N | r | N | r | N |
| McGwigan and Kanawha County School System | .63 | 41 | .52 | 39 | .67 | 21 | .23 | 39 |
| Far West School | .61 | 38 | .29 | 38 | .43 | 26 | .32 | 29 |
| Community Experiences for Career Education | .33 | 16 | .03 | 16 | .48 | 13 | .13 | 13 |
| Academy for Career Education | .44 | 20 | .04 | 20 | .56 | 12 | .13 | 19 |
| All projects | .55 | 115 | .29 | 113 | .56 | 72 | .23 | 100 |
| **Spearman-Brown Estimate of the Reliability of Average of First and Second Choice Scores** | | | | | | | | |
| | r | Std. Dev. | r | Std. Dev. | r | Std. Dev. | r | Std. Dev. |
| McGwigan and Kanawha County School System | .77 | 21.0 | .68 | 8.8 | .80 | 23.0 | .37 | 9.5 |
| Far West School | .76 | 21.3 | .45 | 7.2 | .60 | 23.2 | .48 | 10.7 |
| Community Experiences for Career Education | .50 | 15.9 | .06 | 8.3 | .65 | 22.6 | .23 | 8.7 |
| Academy for Career Education | .61 | 15.3 | .08 | 5.0 | .72 | 18.5 | .23 | 9.0 |
| All projects | .71 | 19.4 | .45 | 7.7 | .72 | 23.3 | .37 | 9.6 |
| Within groups standard deviation | | 19.6 | | 7.6 | | 22.3 | | 9.7 |
| **Estimated Within Group Reliability** | | | | | | | | |
| | r | | r | | r | | r | |
| McGwigan and Kanawha County School System | .74 | | .57 | | .79 | | .40 | |
| Far West School | .72 | | .51 | | .57 | | .37 | |
| Community Experiences for Career Education | .67 | | .00 | | .64 | | .38 | |
| Academy for Career Education | .76 | | .60 | | .81 | | .34 | |
| All projects | .72 | | .44 | | .69 | | .38 | |
| Est. S.E. of meas. | 10.4 | | 5.7 | | 12.4 | | 7.6 | |

The table also shows, however, that this variation is due, in part, to differences in the standard deviations of the various scores for the different projects. The bottom third of the table shows the estimated reliability coefficients for groups having equal standard deviations. The within groups standard deviation for the four projects was used as the basis for making this correction.

It seems evident from these data that the two scores based on the number of incorrect responses made by students (Incorrect Necessary and Incorrect Not Necessary) are not sufficiently reliable to use even for group or project evaluation. The other two scores (Correct Necessary and Correct Not Necessary) do seem reliable enough for these purposes, particularly if one considers the fact that these may be underestimates of the reliabilities.

The intercorrelations of the four scores using either the average of the first and second career choice scores, or the first choice score if a student had no second choice, are shown in Tables 17 through 25.

The numbers of students used in the computation of these correlation coefficients varies because of the rule that percentage scores would be computed only if five or more characteristics had been keyed as correct for a given career, or, in the computation of the two incorrect scores, if the student had made five or more responses.

## Estimated Reliability of Self Image Indicators

The tables in this section provide information on the estimated reliabilities used in arriving at decisions about the indicators to be used in assessment of EBCE outcomes concerned with self-image. The estimated reliabilities were obtained by using alternate characteristics (as they appeared on the form used in obtaining the student ratings) to compute the various scores. The choice of alternate characteristics was purely arbitrary. There was no attempt to determine whether these alternate characteristics would in any sense yield parallel measures of the self-image, and in fact it seems rather unlikely that they would. To this extent, the Spearman-Brown estimates of the reliabilities for the indicators or scores derived using all the characteristics is probably an underestimate.

TABLE 17

CAREER REQUIREMENTS SCORES CORRELATIONS

First Choice Careers

McGwigan and Kanawha County School System

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.16 | 1.00 | | |
| Correct Not. Nec. | -.19 | -.45 | 1.00 | |
| Incorrect Not Nec. | -.48 | .01 | .26 | 1.00 |
| N* | 57 | 57 | 40 | 57 |
| Mean | 66.2 | 11.7 | 50.5 | 18.7 |
| Std. Dev. | 20.8 | 11.3 | 25.8 | 11.1 |

* The number of students for computation of the correlation coefficients ranged from 40-57.

CAREER REQUIREMENTS SCORES CORRELATIONS

Second Choice Careers

McGwigan and Kanawha County School System

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | .18 | 1.00 | | |
| Correct Not Nec. | -.28 | -.25 | 1.00 | |
| Incorrect Not Nec. | -.54 | -.22 | .24 | 1.00 |
| N* | 47 | 45 | 37 | 45 |
| Mean | 63.3 | 9.4 | 56.1 | 14.0 |
| Std. Dev. | 24.1 | 8.1 | 28.0 | 12.0 |

* The number of students for computation of the correlation coefficients ranged from 35-45.

TABLE 18

CAREER REQUIREMENTS SCORES CORRELATIONS

Average of First and Second Career Choices

McGwigan Experimental and Control Groups

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not. Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | .17 | 1.00 | | |
| Correct Not Necessary | -.37 | -.30 | 1.00 | |
| Incorrect Not Necessary | -.48 | -.14 | .14 | 1.00 |
| N * | 51 | 51 | 44 | 51 |
| Mean | 64 | 10 | 55 | 18 |
| Std. Dev. | 20 | 8 | 26 | 10 |

*The number of students for computation of the correlation coefficients ranged from 44 to 51.

TABLE 19

CAREER REQUIREMENTS SCORES CORRELATIONS

First Choice Careers

Far West School

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | .01 | 1.00 | | |
| Correct Not. Nec. | .10 | -.44 | 1.00 | |
| Incorrect Not Nec. | -.38 | -.08 | .08 | 1.00 |
| N* | 68 | 66 | 58 | 59 |
| Mean | 62.1 | 13.2 | 36.8 | 13.4 |
| Std. Dev. | 24.9 | 8.7 | 25.4 | 10.6 |

* The number of students for computation of the correlation coefficients ranged from 51-66.

CAREER REQUIREMENTS SCORES CORRELATIONS

Second Choice Careers

Far West School

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | .20 | 1.00 | | |
| Correct Not Nec. | .22 | -.30 | 1.00 | |
| Incorrect Not Nec. | -.44 | -.32 | .05 | 1.00 |
| N* | 51 | 51 | 38 | 44 |
| Mean | 63.5 | 11.9 | 34.4 | 16.0 |
| Std. Dev. | 22.4 | 8.7 | 27.9 | 13.8 |

* The number of students for computation of the correlation coefficients ranged from 32-51.

TABLE 20

CAREER REQUIREMENTS SCORES CORRELATIONS

Average of First and Second Career Choices

Far West School Experimental and Control Groups

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not. Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | .11 | 1.00 | | |
| Correct Not Necessary | .20 | -.33 | 1.00 | |
| Incorrect Not Necessary | -.38 | -.33 | .00 | 1.00 |
| N * | 66 | 64 | 57 | 60 |
| Mean | 62 | 13 | 37 | 15 |
| Std. Dev. | 24 | 8 | 25 | 11 |

*The number of students for computation of the correlation coefficients ranged from 52-66.

TABLE 21

CAREER REQUIREMENTS SCORES CORRELATIONS

First Choice Careers

Community Experiences for Career Education

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.03 | 1.00 | | |
| Correct Not. Nec. | -.12 | -.20 | 1.00 | |
| Incorrect Not Nec. | -.44 | -.13 | -.22 | 1.00 |
| N* | 28 | 28 | 24 | 27 |
| Mean | 64.8 | 13.1 | 46.5 | 13.3 |
| Std. Dev. | 21.8 | 10.4 | 24.0 | 10.5 |

* The number of students for computation of the correlation coefficients ranged from 23-28.

CAREER REQUIREMENTS SCORES CORRELATIONS

Second Choice Careers

Community Experiences for Career Education

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.28 | 1.00 | | |
| Correct Not Nec. | .20 | -.37 | 1.00 | |
| Incorrect Not Nec. | -.40 | .06 | .23 | 1.00 |
| N* | 20 | 20 | 19 | 18 |
| Mean | 64.8 | 15.1 | 48.4 | 12.9 |
| Std. Dev. | 17.8 | 11.5 | 29.6 | 10.0 |

* The number of students for computation of the correlation coefficients ranged from 17-20

TABLE 22

CAREER REQUIREMENTS SCORES CORRELATIONS

Average of First and Second Career Choices

Community Experiences for Career Education
Experimental and Control Groups

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not. Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.27 | 1.00 | | |
| Correct Not Necessary | -.15 | -.15 | 1.00 | |
| Incorrect Not Necessary | -.37 | .22 | .05 | 1.00 |
| N* | 25 | 25 | 23 | 25 |
| Mean | 64 | 13 | 55 | 13 |
| Std. Dev. | 19 | 7 | 22 | 8 |

*The number of students for computation of the correlation coefficients ranged from 23-25.

TABLE 23

CAREER REQUIREMENTS SCORES CORRELATIONS

First Choice Careers

Academy for Career Education

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.15 | 1.00 | | |
| Correct Not. Nec. | -.05 | -.40 | 1.00 | |
| Incorrect Not Nec. | -.52 | -.21 | .39 | 1.00 |
| N* | 39 | 38 | 26 | 37 |
| Mean | 65.7 | 9.9 | 39.4 | 15.1 |
| Std. Dev. | 21.1 | 7.4 | 27.2 | 13.0 |

* The number of students for computation of the correlation coefficients ranged from 24-38.

CAREER REQUIREMENTS SCORES CORRELATIONS

Second Choice Careers

Academy for Career Education

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.21 | 1.00 | | |
| Correct Not Nec. | .01 | -.23 | 1.00 | |
| Incorrect Not Nec. | -.45 | .06 | .36 | 1.00 |
| N* | 31 | 31 | 26 | 29 |
| Mean | 68.7 | 12.9 | 43.8 | 13.6 |
| Std. Dev. | 17.3 | 6.4 | 23.2 | 9.9 |

* The number of students for computation of the correlation coefficients ranged from 25-31.

TABLE 24

CAREER REQUIREMENTS SCORES CORRELATIONS

Average of First and Second Career Choices

Academy for Career Education
Experimental and Control Groups

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not. Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.13 | 1.00 | | |
| Correct Not Necessary | .13 | -.43 | 1.00 | |
| Incorrect Not Necessary | -.53 | -.15 | .35 | 1.00 |
| N* | 40 | 39 | 32 | 37 |
| Mean | 66 | 11 | 40 | 16 |
| Std. Dev. | 20 | 7 | 28 | 10 |

*The number of students for computation of the correlation coefficients ranged from 29-37.

TABLE 25

CAREER REQUIREMENTS SCORES CORRELATIONS

First Choice Careers

All Projects Combined

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | -.08 | 1.00 | | |
| Correct Not. Nec. | -.02 | -.38 | 1.00 | |
| Incorrect Not Nec. | -.44 | -.08 | .16 | 1.00 |
| N* | 192 | 189 | 148 | 180 |
| Mean | 64.4 | 12.1 | 42.5 | 15.4 |
| Std. Dev. | 22.4 | 9.6 | 26.0 | 11.4 |

* The number of students for computation of the correlation coefficients ranged from 138-189.

CAREER REQUIREMENTS SCORES CORRELATIONS

Second Choice Careers

All Projects Combined

| | Correct Necessary | Incorrect Necessary | Correct Not Nec. | Incorrect Not Nec. |
|---|---|---|---|---|
| Correct Necessary | 1.00 | | | |
| Incorrect Necessary | .06 | 1.00 | | |
| Correct Not Nec. | -.00 | -.31 | 1.00 | |
| Incorrect Not Nec. | -.47 | -.17 | .16 | 1.00 |
| N* | 149 | 147 | 120 | 136 |
| Mean | 64.7 | 11.8 | 45.3 | 14.4 |
| Std. Dev. | 21.4 | 8.6 | 28.3 | 11.9 |

* The number of students for computation of the correlation coefficients ranged from 110-147.

The data in tables 26, 28, and 30 indicate that these indicators or scores are sufficiently reliable for use in group or project evaluation. They also indicate, however, that the distributions of the indicators based on the number of characteristics for which the student says "Don't Know" are so skewed that this score would be of little value This was confirmed by examination of the distributions; hardly any of the students ever marked "Don't Know". The high correlation between the two halves simply indicates that the few students who occasionally used this response did so consistently.

The data in the intercorrelation tables 27, 29, and 31 indicate that the student ratings using their peers as referents and using adults as referents are relatively independent. Whatever these ratings are measuring, they do not appear to be the projection of some single underlying self-image.

As noted in the text, one of the principal reasons for obtaining these self-ratings was to examine the consistency between self-image and the student's perception of the requirements for the careers of interest. Two counts were made: one of the numbers of characteristics on which the student rated him- or herself high and perceived as "Necessary" for the career of interest; and one of the number of characteristics rated low and perceived as "Not Necessary". In order to estimate the reliability of these counts, they were obtained separately for each of the six sections of the form used to obtain the self-image ratings. The estimated reliabilities of these two counts (High self-rating/Necessary and Low self-rating/Not Necessary) are approximately .75-.85 and .30-.70 respectively.

On the basis of all the data obtained from the questions dealing with student self-image, the two average rating scores (Peers and Adults as referents) and the count of the consistency between high ratings and necessary characteristics seem sufficiently reliable for use in project evaluation.

TABLE 26

STATISTICS FOR SELF-IMAGE RATINGS
ON ALTERNATE PERSONAL CHARACTERISTICS

McGwigan and Kanawha County Schools (N=65)

| | | Half 1 | | Half 2 | | |
|---|---|---|---|---|---|---|
| | $r_{12}$ | Mean | Std. Dev. | Mean | Std. Dev. | $r_{S-B}$* |
| Average No. of Characteristics, Don't Know, Peers | .87 | 0.27 | 0.70 | 0.52 | 1.12 | .93 |
| Average No. of Characteristics, Don't Know, Adults | .84 | 0.50 | 0.90 | 0.75 | 1.35 | .91 |
| Averate Rating-Peers | .77 | 3.21 | 0.26 | 3.14 | 0.28 | .87 |
| Average Rating-Adults | .85 | 3.09 | 0.33 | 3.01 | 0.36 | .92 |

*This correlation is the Spearman-Brown estimate of the reliability of the scores based on all the characteristics.

TABLE 27

INTERCORRELATIONS OF SELF-IMAGE SCORES
ON ALL PERSONAL CHARACTERISTICS

McGwigan and Kanawha County Schools (N=65)

| | Ave. No. Characteristics, Don't Know | | Average Ratings | |
|---|---|---|---|---|
| | Peers | Adults | Peers | Adults |
| Average No. of Characteristics, Don't Know, Peers | 1.00 | | | |
| Average No. of Characteristics, Don't Know, Adults | .87 | 1.00 | | |
| Average Rating, Peers | .04 | -.05 | 1.00 | |
| Average Rating, Adults | .40 | .28 | .58 | 1.00 |
| Means | 0.80 | 1.26 | 3.18 | 3.05 |
| Std. Dev. | 1.77 | 2.16 | 0.25 | 0.33 |

TABLE 28

STATISTICS FOR SELF-IMAGE RATINGS
ON ALTERNATE PERSONAL CHARACTERISTICS

Far West School (N=89)

| | | Half 1 | | Half 2 | | |
|---|---|---|---|---|---|---|
| | $r_{12}$ | Mean | Std. Dev. | Mean | Std. Dev. | $r_{S-B}$* |
| Average No. of Characteristics, Don't Know, Peers | .89 | 0.71 | 1.24 | 0.84 | 1.40 | .94 |
| Average No. of Characteristics, Don't Know, Adults | .93 | 1.42 | 2.12 | 1.46 | 2.21 | .96 |
| Averate Rating-Peers | .78 | 3.21 | 0.25 | 3.17 | 0.30 | .88 |
| Average Rating-Adults | .80 | 3.11 | 0.33 | 3.05 | 0.34 | .89 |

*This correlation is the Spearman-Brown estimate of the reliability of the scores based on all the characteristics.

TABLE 29

INTERCORRELATIONS OF SELF-IMAGE SCORES
ON ALL PERSONAL CHARACTERISTICS

Far West School (N=89)

| | Ave. No. Characteristics, Don't Know | | Average Ratings | |
|---|---|---|---|---|
| | Peers | Adults | Peers | Adults |
| Average No. of Characteristics, Don't Know, Peers | 1.00 | | | |
| Average No. of Characteristics, Don't Know, Adults | .68 | 1.00 | | |
| Average Rating, Peers | -.21 | -.26 | 1.00 | |
| Average Rating, Adults | .02 | -.01 | .58 | 1.00 |
| Means | 1.55 | 2.88 | 3.19 | 3.08 |
| Std. Dev. | 2.56 | 4.25 | 0.26 | 0.32 |

TABLE 30

STATISTICS FOR SELF-IMAGE RATINGS
ON ALTERNATE PERSONAL CHARACTERISTICS

Community Experiences in Career Education (N=36)

| | | Half 1 | | Half 2 | | |
|---|---|---|---|---|---|---|
| | $r_{12}$ | Mean | Std. Dev. | Mean | Std. Dev. | $r_{S-B}$* |
| Average No. of Characteristics, Don't Know, Peers | .94 | 0.24 | 0.69 | 0.44 | 1.02 | .97 |
| Average No. of Characteristics, Don't Know, Adults | .86 | 0.43 | 0.96 | 0.56 | 1.19 | .92 |
| Averate Rating-Peers | .77 | 3.17 | 0.25 | 3.06 | 0.28 | .87 |
| Average Rating-Adults | .85 | 3.08 | 0.37 | 3.01 | 0.42 | .92 |

*This correlation is the Spearman-Brown estimate of the reliability of the scores based on all the characteristics.

TABLE 31

INTERCORRELATIONS OF SELF-IMAGE SCORES
ON ALL PERSONAL CHARACTERISTICS

Community Experiences in Career Education (N=36)

| | Ave. No. Characteristics, Don't Know | | Average Ratings | |
|---|---|---|---|---|
| | Peers | Adults | Peers | Adults |
| Average No. of Characteristics, Don't Know, Peers | 1.00 | | | |
| Average No. of Characteristics, Don't Know, Adults | .95 | 1.00 | | |
| Average Rating, Peers | .27 | .26 | 1.00 | |
| Average Rating, Adults | .32 | .35 | .72 | 1.00 |
| Means | 0.68 | 0.99 | 3.11 | 3.04 |
| Std. Dev. | 1.68 | 2.07 | 0.25 | 0.38 |

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# APPENDIX A

Forms Completed by Students During the Course of the Student Interview

Career Area Interest and Knowledge

Career Requirements

Personal Characteristics

CAREER AREA INTEREST AND KNOWLEDGE

Date_____

Student Name_____ School_____ Grade_____

Please indicate both your interest in and knowledge about each of the career areas listed below.

| CAREER AREA | INTEREST | | | | | | KNOWLEDGE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | None 1 | 2 | Some 3 | 4 | Very High 5 | Don't Know - | None 1 | 2 | Some 3 | 4 | Fair 5 |
| b. Business Administration (Accountant, Production Manager, Military Officer, Pilot, Stockbroker) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| c. Construction Trades (Bricklayer, Carpenter, Heavy Equipment Operator, Miner) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| d. Engineering, Physical Science, Mathematics and Architecture (Architect, Engineer, Statistician, College Science Teacher) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| e. Fine Arts and Performing Arts (Painter, Sculptor, Commercial Artist, Musician, Theater Worker) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| f. General Labor, Community and Public Service (Butcher, Bus or Truck Driver, Hairdresser, Policeman, Military Enlisted Man, General Laborer) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| g. General Teaching and Social Service (Priest or Minister, Social Worker, School Teacher) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |

PAGE 2 - Continued

CAREER AREA INTEREST AND KNOWLEDGE

Date_____

Student Name_____ School_____ Grade_____

Please indicate both your interest in and knowledge about each of the career areas listed below.

| CAREER AREA | INTEREST | | | | | | KNOWLEDGE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | None 1 | 2 | Some 3 | 4 | Very High 5 | Don't Know - | None 1 | 2 | Some 3 | 4 | Fair 5 |
| h. Humanities, Law, Social and Behavioral Sciences (Diplomat, Newspaper Reporter, Librarian, Social Scientist, College English or Social Science or Foreign Language Teacher) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| i. Mechanics and Industrial Trades (Fashion Designer, Mechanic, Repairman, Metal Worker) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| j. Medical and Biological Sciences (Agricultural Agent, Dentist, Nurse, Veterinarian, Dietician) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| k. Proprietors (Self-Employed) and Sales (Store Clerk or Salesperson, Farm Owner, Owner of Business, Auto or Insurance Salesperson) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| l. Secretarial-Clerical and Office Work (Bookkeeper, Bank Clerk, Typist or Keypunch Operator, Receptionist) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| m. Technical Jobs and Specialized Technologists (Computer Operator or Serviceman, Draftsman, Laboratory Technician, Surveyor, Medical or Dental Technologist) | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |

## CAREER REQUIREMENTS

Student's Name_____ Career Selected_____ Choice: 1st 2nd 3rd (circle)

| | Necessary | Helpful for Advancement | Not Necessary | Don't Know |
|---|---|---|---|---|
| **1. EDUCATION AND TRAINING** | | | | |
| High School Diploma | — | — | — | — |
| Apprenticeship training | — | — | — | — |
| Vocational-technical school training | — | — | — | — |
| Training provided by the military | — | — | — | — |
| On-the-job training | — | — | — | — |
| Community college--less than two years | — | — | — | — |
| Community college--two years | — | — | — | — |
| Bachelor's degree | — | — | — | — |
| Master's degree | — | — | — | — |
| Doctoral degree | — | — | — | — |
| Post-doctoral training or internship | — | — | — | — |
| **2. SCHOOL-RELATED ABILITIES** | | | | |
| Basic Reading: Ordinary written directions, newspaper articles. | — | — | — | — |
| Advanced Reading: College-level textbooks, literary magazines, technical materials. | — | — | — | — |

| | Necessary | Helpful for Advancement | Not Necessary | Don't Know |
|---|---|---|---|---|
| Basic Writing: Describe events, write directions. | — | — | — | — |
| Advanced Writing: Write good essays and technical reports. | — | — | — | — |
| Basic Arithmetic: Add, subtract, multiply, divide, and do fractions. | — | — | — | — |
| Mathematical Comprehension: Use formulas, balance or solve equations. | — | — | — | — |
| Reasoning: Solve problems logically. Draw conclusions from particular facts. | — | — | — | — |
| Space Ability: Imagine how to construct objects from plans. See how the parts of things will fit together. | — | — | — | — |
| Use of Resource and Reference Materials | — | — | — | — |
| Memorization | — | — | — | — |
| Interpretation and Incorporation of Ideas: Understand information from various sources and put it together in logical fashion. | — | — | — | — |
| Planning and Organization of Time | — | — | — | — |
| 3. PHYSICAL ABILITIES | | | | |
| Health: Be healthy enough to meet the demands of school and most jobs. | — | — | — | — |
| Strength, Stamina, Endurance: Perform actions requiring bodily strength and endurance. | — | — | — | — |

| | Necessary | Helpful for Advancement | Not Necessary | Don't Know |
|---|---|---|---|---|
| Manual Dexterity: Perform actions requiring good coordination of hands and fingers. | — | — | — | — |
| **4. CREATIVE ABILITIES** | | | | |
| General: Use materials, words or ideas in original ways. | — | — | — | — |
| Artistic | — | — | — | — |
| Writing | — | — | — | — |
| Musical | — | — | — | — |
| Dramatic | — | — | — | — |
| Mechanical Abilities: Learn how to operate and repair complicated mechanical devices. | — | — | — | — |
| **5. INTER-PERSONAL SKILLS** | | | | |
| Persuasive: Persuade others to agree with an idea or to follow a course of action. | — | — | — | — |
| Leadership: Lead a group toward group goals. | — | — | — | — |
| Cooperation: Recognize the needs of others and sacrifice some of your own interests in working toward a group goal. | — | — | — | — |
| Friendliness | — | — | — | — |

| | Necessary | Helpful for Advancement | Not Necessary | Don't Know |
|---|---|---|---|---|
| 6. INTERESTS | | | | |
| Outdoor | — | — | — | — |
| Mechanical | — | — | — | — |
| Computational | — | — | — | — |
| Scientific | — | — | — | — |
| Sales | — | — | — | — |
| Art: Painting, sculpting, photography. | — | — | — | — |
| Performing Arts: Music, drama and dance. | — | — | — | — |
| Verbal: Communicating ideas. | — | — | — | — |
| Aural: Listening and speaking skills are important. | — | — | — | — |
| Social Service: Working with people. | — | — | — | — |
| Clerical: Using office skills. | — | — | — | — |
| 7. ADDITIONAL PERSONAL CHARACTERISTICS | | | | |
| Extra level of motivation | — | — | — | — |
| Self-discipline | — | — | — | — |
| Ability to take directions easily | — | — | — | — |

| | Necessary | Helpful for Advancement | Not Necessary | Don't Know |
|---|---|---|---|---|
| Ability to assume initiative | — | — | — | — |
| Willingness to conform to standards of dress | — | — | — | — |
| Ability to work alone | — | — | — | — |
| **8. ADDITIONAL RESOURCES AND REQUIREMENTS** | | | | |
| Money for additional education | — | — | — | — |
| Money to buy necessary equipment, books, etc. | — | — | — | — |
| Money to get business established (rent, inventory, etc.) | — | — | — | — |
| Union membership | — | — | — | — |
| Special licensing or certification requirements | — | — | — | — |
| Professional examinations (bar, real estate, etc.) | — | — | — | — |

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For use with Questions 10 and 11

SR - A

Student's Name: _____

YOU, COMPARED WITH . . .

| | OTHERS IN YOUR AGE GROUP | | | | ADULTS YOU KNOW | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. SCHOOL-RELATED ABILITIES | Low | Average | High | Don't Know or Not Sure | Low | Average | High | Don't Know or Not Sure | Change |
| Basic Reading: | — | — | — | — | — | — | — | — | — |
| Advanced Reading: | — | — | — | — | — | — | — | — | — |
| Basic Writing: | — | — | — | — | — | — | — | — | — |
| Advanced Writing: | — | — | — | — | — | — | — | — | — |
| Basic Arithmetic: | — | — | — | — | — | — | — | — | — |
| Mathematical Comprehension: | — | — | — | — | — | — | — | — | — |
| Reasoning: | — | — | — | — | — | — | — | — | — |
| Space Ability: | — | — | — | — | — | — | — | — | — |
| Use of Resource and Reference Materials: | — | — | — | — | — | — | — | — | — |

For use with Questions 10 and 11

SR - B

Student's Name:_____

YOU, COMPARED WITH . . .

| | OTHERS IN YOUR AGE GROUP | | | | ADULTS YOU KNOW | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low | Average | High | Don't Know or Not Sure | Low | Average | High | Don't Know or Not Sure | Change |
| Memorization: | — | — | — | — | — | — | — | — | — |
| Interpretation and Incorporation of Ideas: | — | — | — | — | — | — | — | — | — |
| Planning and Organization of Time: | — | — | — | — | — | — | — | — | — |
| 2. PHYSICAL ABILITIES | | | | | | | | | |
| Health: | — | — | — | — | — | — | — | — | — |
| Strength, Stamina, Endurance: | — | — | — | — | — | — | — | — | — |
| Physical Skills: | — | — | — | — | — | — | — | — | — |
| Manual Dexterity: | — | — | — | — | — | — | — | — | — |

For use with Questions 10 and 11

SR - C

Student's Name:_____

YOU, COMPARED WITH . . .

| | OTHERS IN YOUR AGE GROUP | | | | ADULTS YOU KNOW | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low | Average | High | Don't Know or Not Sure | Low | Average | High | Don't Know or Not Sure | Change |
| **3. CREATIVE ABILITIES** | | | | | | | | | |
| General: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Artistic: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Writing: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Musical: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Dramatic: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Mechanical: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Clerical Speed and Accuracy: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |

For use with Questions 10 and 11

SR - D

Student's Name: _____

| | YOU, COMPARED WITH . . . | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | OTHERS IN YOUR AGE GROUP | | | | ADULTS YOU KNOW | | | | |
| | Low | Average | High | Don't Know or Not Sure | Low | Average | High | Don't Know or Not Sure | Change |
| **4. INTER-PERSONAL SKILLS** | | | | | | | | | |
| Persuasive: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Leadership: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Cooperation: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Friendliness: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| **5. INTERESTS** | | | | | | | | | |
| Outdoor: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Mechanical: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Computational: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Scientific: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Sales: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |

For use with Questions 10 and 11

SR - E

Student's Name: _____

YOU, COMPARED WITH . . .

| | OTHERS IN YOUR AGE GROUP | | | | ADULTS YOU KNOW | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low | Average | High | Don't Know or Not Sure | Low | Average | High | Don't Know or Not Sure | Change |
| Art: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Performing Arts: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Verbal: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Aural: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Social Service: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Clerical: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 6. ADDITIONAL PERSONAL CHARACTERISTICS | | | | | | | | | |
| Level of Motivation: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Self-discipline: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Ability to Take Directions Easily: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |

For use with Questions 10 and 11

SR - F

Student's Name: _____

YOU, COMPARED WITH . . .

| | OTHERS IN YOUR AGE GROUP | | | | ADULTS YOU KNOW | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low | Average | High | Don't Know or Not Sure | Low | Average | High | Don't Know or Not Sure | Change |
| Ability to Assume Initiative: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Willingness to Conform to Standards of Dress: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| Ability to Work Alone: | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 7. WRITE IN ANY OTHER ABILITIES OR SKILLS YOU HAVE THAT ARE NOT LISTED ABOVE: | | | | | | | | | |
| _____ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| _____ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| _____ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| _____ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ | ___ |